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An Old Timer Looks at the Pharmacopœia¹

WORTLEY F. RUDD

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In the preparation of this series of articles, our investigations of U.S.P. policies, politics, procedures—and its purse—have led us into many interesting fields. We believe these studies have uncovered many facts, some of them significant in themselves and others by implication only, which are not generally known even to those otherwise well informed pharmaceutically.

It has long been our feeling that pharmacopœial revision work and its perquisites have been distributed all too frequently to members of the inner circle of those who control its policies. This procedure has probably grown out of the fact that for more than a generation control has been centered rather largely around an old and well known independent school—The Philadelphia College of Pharmacy and Science. Many of its staff members have been active in both pharmacopœial work and in the preparation of other pharmaceutical compendia.

A fitting text for this concluding article may be found in the editorial columns of the January, 1940, issue of the *American Journal of Pharmaceutical Education*. "... for the good of the Pharmacopœia, there are many who believe that the elimination of nepotism would have as wholesome effect upon the making and the control of the Pharmacopœia as it has had upon the efficiency of teaching and administration in our western universities." For evidence of the existence of conditions referred to in that editorial, we have found it necessary to go to official records and to information furnished us by Chairman Beal, of the Board of Trustees, who has been—we gratefully acknowledge—generous with his time and effort to furnish us data without which these articles could not have been written at all.

In this connection, we have gone rather carefully into the whole matter of honorary degrees and certain family rela-

¹This is the fourth of a series of articles published in this *Journal* for the purpose of giving those interested in the revision of the United States Pharmacopœia a clearer conception of the manner in which it has been done. Other articles appeared in the July and October, 1939, and the January, 1940, issues.—Editor.

tionships, etc., of those officially connected with the Pharmacopœia. Some results of these studies are given in the following summary:

The president, and the first and third vice-presidents of the U.S.P. Convention; all members except one of the Board of Trustees; the treasurer of the Convention, and both men who have been secretaries of the Board, and fourteen members of the Revision Committee, hold honorary degrees from a single institution. It is but fair to say that some of these are alumni in their own right, also. Three of those as listed above are members of the Board of Trustees of that institution. The largest amount of money allotted for research by the Board was spent under the direction of the son of one of its members. Both father and son hold honorary degrees from that institution, and the latter is a member of its Board of Trustees. The second largest allotment was spent under the direction of one holding an honorary degree as above. The son of another Board of Trustees member was awarded a fellowship from U.S.P. funds. Nineteen staff members of this same college of pharmacy received stipends from a minimum of \$1.50 to \$1.610.00 for services rendered the chairman, etc.

Further, thirteen members of the Revision Committee, or approximately 25 per cent of the whole number not counting the chairman, all of whom are alumni—honorary or graduates—of the institution in question, were paid 41 per cent of the total honoraria awarded Revision Committee members. Counting the chairman, making this number fourteen, and adding his salary, this small group were paid 90 per cent plus of the total amount for Revision Committee members. It seems unnecessary to pursue this phase of the subject further.

These statements carry no implication whatever that these honors were not awarded in every instance to worthy men. Nor indeed, that a dollar of U.S.P. funds has been spent that did not bring a return in service.

The payment of certain small amounts to staff members, as stated above, reminds us that in our institution our Revision Committee staff member received liberal aid from some of his confreres. He certainly gave no thought whatever to having these men compensated. Nor were charges made for the small amount of material used in their experimental work. It seemed just a natural thing for these trifling items to go as our contribution to a worthy cause. We have no doubt

that Revision Committee members in other institutions throughout the country had this same experience, many of them even in a much larger way, than did ours. This sort of thing is, it appears to us, as it should be.

It is, we believe, generally conceded in pharmaceutical circles that during the past two or three decades leadership in American pharmacy, especially in pharmaceutical education, has been taken over largely by the university pharmacy schools. Usually they have large resources, modernly trained faculties, ample campus areas, abundant and admirably equipped laboratory facilities for both teaching and research. Above all, such institutions through their academic departments—chemistry, biology, physics, bacteriology, physiology, etc.—afford opportunities for university atmosphere and university training for future pharmacists impossible to find in the majority of the older type colleges of pharmacy. We are warranted, we believe, in making the general observation that we have always thought that more and more the U.S.P. should be privileged to develop in the sort of surroundings described above. That it should be freed from much of the inbreeding that has surrounded it in the past; it should be made possible for specialists—the very best it is possible to find in the various fields it must cover—to contribute to the maximum of their ability to the preparation of its monographs and standards. A larger proportion of U.S.P. funds should, we believe, be made available for true research, and correspondingly less for those items that perhaps after all are more or less “hang-overs” from its long control by a single institution.

Small bills for services to the chairman, etc., would, we believe, under such circumstances be largely absorbed by the large and wealthy institutions of the country in which the research might be distributed.

What we have been trying to say all through this paper, and in previous ones in this series, is not that we have not a good Pharmacopœia, but we believe it can be improved. Not that those in control have not been active and faithful to their obligations, but perhaps more new blood in the enterprise—men free from the traditional way of doing things—might increase the efficiency and economy with which revisions are made. Not that we are not fully aware that it costs money—much of it—to administer work of this nature, but that money for research—lots of money—must be found and some of it

might well come from the present high overhead. Not that work on pharmacopœial revision does not furnish a good background for the preparation of text books in the pharmaceutical field, but that such books should be so prepared that they will not replace the U.S.P. but rather make its use more general. Not that the atmosphere in which the Pharmacopœia has been developed across the years has not been conducive to very good work, but that the almost unlimited facilities of many of our great centers of learning have not been utilized as we believe they could and should be for the making of a better Pharmacopœia.

The writing of these articles has not been a pleasant experience. We had hoped throughout the decade that someone else would do the job. Early in 1939 we discussed this matter with a member of the Board of Trustees of the U.S.P. He advised us strongly against writing them at all, stating that in his judgment it would do no good, and would certainly make new enemies for any man who undertook to write them. In spite of this we have felt impelled to undertake the study, largely because of two incidents that occurred at the 1930 Convention.

Hardly two hours before the organization meeting of the newly elected Revision Committee, it was reported to the new candidate for the chairmanship by an intimate friend of the old chairman, that should the former be elected the medical men of the Revision Committee would withdraw their support from the Pharmacopœia because they considered him the candidate of the patent medicine interests of the country. It is needless to say that this rumor created nothing less than consternation among us because we believed it to be absolutely false. However, the time to run it down and prove it false was not available.

The second incident: The absence from the organization meeting of several who previously had apparently been most active for a change in the chairmanship. This has never been explained satisfactorily. The result, however, is now history.

We cannot close this paper without this final word. Regardless of all other considerations, may we hope that delegates to the 1940 Convention will realize that the Pharmacopœia belongs to no individual and to no group of individuals. As a national standard for the protection of the life and health of every man, woman and child in this country, we

should not let our personal ambitions or spirit of partisanship control our actions as we elect those who are to control the policies of the next revision. Pharmacists, physicians, chemists, pharmacologists, bacteriologists, vitamin chemists, and all others who should have a part in it, must work together as never before for the most perfect revision and the most useful U.S.P. that it is possible for us to make.

Objectives of Pharmacological Research*

JAMES M. DILLE

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Research in pharmacology, like that in most fields, is directed toward either practical or theoretical ends. The function of practical pharmacology and its relation to therapeutics is described in papers by Leake (1), Puckner and Leech (2) and Musser (3). These writers describe a definitely humanitarian aspect of pharmacological research since it furnishes the means of protecting the public health from dangerous drugs and furnishes the methods by which new remedies may be compared with old ones in order to decide whether or not they are worthy of introduction into therapeutics. This practical aspect of pharmacology may be termed the evaluation of drugs.

Drugs may belong to one of the following three types; (a) those which correct disturbed functions or produce changes in normal functions, such as digitalis or anesthetics, (b) those which limit the growth of pathogenic organism, such as antiseptics or chemotherapeutic agents, and (c), those which supply a deficiency necessary to life or growth, such as hormones or vitamins.

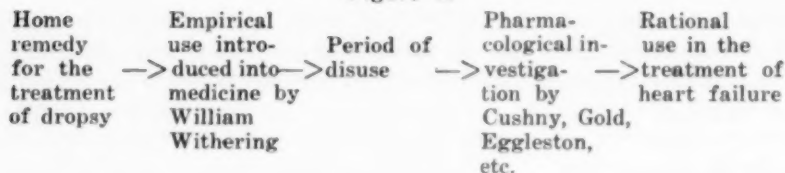
Two examples taken from the first and second groups given above, show that the evaluation and introduction of a drug into the practice of therapeutics often takes a complicated pathway.

Figure 1 shows how digitalis was introduced at some distant time for the treatment of a purely symptomatic condi-

*Read before the Conference of Teachers of Pharmacognosy and Pharmacology of the American Association of Colleges of Pharmacy, at Atlanta, Georgia, August 21, 1939.

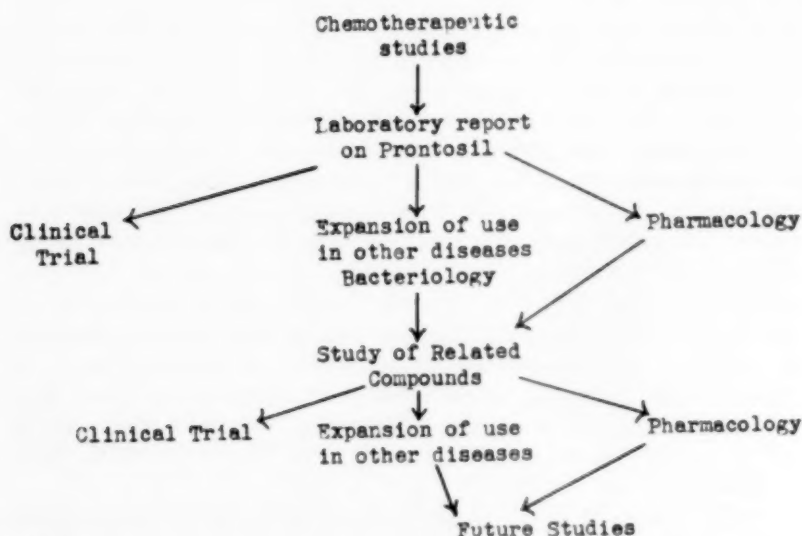
tion of dropsy then taken over into medicine for the same purpose.

Figure 1.



Pharmacological investigations, however, showed why it was effective in dropsy, and so today its indication and limitations of use are known and it can be used with assurance of success.

Figure 2.



In contrast to this we have figure 2, which shows the introduction and subsequent history of sulfanilamide. The story of these compounds has not yet been completed, but here we have the introduction of Prontosil in 1935 and its almost immediate clinical application. Simultaneously its pharmacology, which explained how it broke down in the body, led to the introduction of sulfanilamide. This in turn led to the introduction of other compounds as pharmacological

and bacteriological studies progressed. It is rather dangerous to begin clinical trials before pharmacological investigations are complete, as was done here. This drug belongs to the second class of drugs mentioned above which act against pathogenic organisms and shows something of the complexity of factors involved. Here the bacteriologist must play an important part in order to find exactly what pathogenic organisms the drug is most effective against. If the drug had belonged to the third class, then the biochemist would have had to work with the pharmacologist in its investigation.

The introduction of any drug might be analyzed in this way, and we should find that the pharmacologist directs the work of the evaluation of the drug, often, however, requiring the aid of the bacteriologist or biochemist. Now in any of these cases let us consider specifically what questions pharmacological research must answer in thus evaluating a drug. These are as follows:

I. The specific description of its principal action.

For example, if the drug is one which produces anesthesia, a careful and detailed description of the nature of the anesthesia produced is important.

II. The mechanism by which this action is brought about.

For example, if a drug lowers blood pressure, the clinician wants to know exactly how it does so, in order to use the drug to its best advantage. This is because a drug may superficially appear to produce a valuable action, but if this action is brought about through some potentially dangerous mechanism, then, of course, the drug would have to be rejected.

III. A description of subsidiary actions.

Practically no drug exerts a single action. So while a drug may be used therapeutically for one action, its other actions may be dangerous. These side actions must be carefully described because they may be so dangerous as to make it necessary to condemn the drug.

IV. The symptoms and treatment of overdosage.

This is the toxicology of the drug and becomes important if the drug has any extensive clinical use. This practical aspect of pharmacological research deals with the description

of the effects of overdosage and the methods of treating patients who have received toxic doses.

V. The route and rate of elimination of the drug.

A drug which is eliminated must be administered frequently in order to achieve its purpose. If, on the other hand, it is eliminated slowly, it might produce poisoning through its accumulation in the body.

VI. The effect of repeated doses.

If the drug is to be given to a patient over a period of time, the questions of whether it will produce habituation, tolerance or addiction must be answered.

These are the practical questions to which the pharmacologist must furnish answers, and if a physician is scientific, he would hesitate to use a drug if he did not have the information we have just described.

By far the greatest amount of work in pharmacological research has been along the practical lines just described. Research in theoretical pharmacology has been slow in contrast to that in practical pharmacology. The reason for this has been first, the pressing need for answers to these questions concerning both old and new drugs, and second, because the advancement of the theoretical aspects of pharmacology is dependent on advances in related fields.

Research in theoretical pharmacology is directed toward an understanding of the ultimate interaction between drugs and cells. When this is accomplished, great advances can then be expected because an adequate law of drug action will then be available and we should expect that drugs could be selected to fit almost any pre-determined requirements we might wish.

This goal is at present far in the future and we must still wait for the genius Cushny mentions in an article published in 1916 (4) in which he says "... it may be possible for some Darwin to build a bridge ... we can only shape the bricks and mix the mortar for him."

There are, however, certain lines of research, the "bricks and mortar", which may furnish the data upon which this basic conception of the future must be based. These may be classed in a general way as follows:

I. Biochemorphology.

In 1885 T. Lauder Brunton (5) said, "the great object

of pharmacology is to obtain such a knowledge of the relations between chemical characters of bodies and their actions on the living organisms that we may be able to predict their actions with certainty, and know the modifications which alterations in their physical and chemical characters will produce on their physiological action." This relationship has been termed *biochemorphology* by Leake (6) and at the time that Brunton wrote, there was the general belief that a relationship might be found between chemical characteristics of a substance and its pharmacological action. Unfortunately, from the standpoint of a complete and adequate understanding of the action of drugs, this field has been disappointing. It has, however, within limitations, produced valuable results and should not be neglected.

II. Physical Chemical Studies.

This field is extensively described in the classic publications of A. J. Clark (7, 8). Experimentally it involves the determination of the action of carefully measured quantities of a drug on a given cell population. It has been found that frequently the number of molecules required per cell is relatively few, and an explanation for their effect has been attempted on the basis of their action at the cell surface or with a receptor in the cell, or by the interference with some chemical reaction which is probably enzymatic. Lamson (9) in a recent paper says that we are throwing a drug about which we know a great deal, into a sea of chemicals, the body, about which we know little. The problem can be seen, therefore, to be exceedingly complex. Clark (10) summarizes it as follows: "... the fundamental problems of drug action are beginning to reveal themselves as examples of selective chemical actions upon a very complex system." If this is the case, then much future work remains to be done in the investigation of this interaction.

III. Detoxication Mechanisms.

Another important line of basic research is the mechanism whereby cells of the body rid themselves of the drug. This is important because not only does the drug act in some way upon the cell, but it is itself acted upon. The sojourn of the drug in the body and the changes which it undergoes are an important part of theoretical pharmacology. Very little is known of this. Many drugs exert their actions quickly and

are apparently rendered ineffective with great rapidity. The way in which the body does this is for the most part unknown. Yet this is important in any complete understanding of the interaction between drugs and cells.

Summary

Pharmacological research serves a twofold purpose. First, it must supply information regarding the feasibility of a drug for clinical use and furnish, in-so-far as is possible, an explanation of the means by which it brings about its action. In doing this it not only protects human patients but provides the basis for rational therapeutics. Second, it must concern itself with an ultimate explanation of the effects of drugs. This involves a complex interaction between the living cell and the drug. The final solution to this seems at present to be far in the future, but there are, nevertheless, certain methods of approach to this problem now available.

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The Aims and Objectives of the Course in Pharmacology and How to Obtain Them*

L. DAVID HINER

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Pharmacology was a natural development in the field of pharmaceutical education, destined by necessity to replace the time-worn subject known as *materia medica*. The early leaders envisioned the service such a course would render to pharmaceutical practice. Undoubtedly, they had clearly in mind the aims and objectives which they sought by such an instructional change. It is the writer's opinion, however, that the course which these pioneers conceived has already gone beyond the accomplishment of the aims and objectives which they had in mind, and unless we who follow them seek new heights for its advancement, pharmacology will soon be in as deep a rut as we found *materia medica*. Much credit is due those who suggested this program which certainly should continue to broaden our aims and objectives for the pharmacology course.

The discussion brought to this conference a year ago carried some valuable and fundamental ideas relative to the development of pharmacological laboratory instruction. It would not be remiss to reiterate those same points again and again, and also to add to them new and workable aims and objectives. Pharmacology is a vital subject—ever changing—and it provides an almost unlimited challenge to its earnest followers.

The chief aim of the early pharmacologists probably was to find a course that would supplant *materia medica*, which as the writer recalls, was primarily a preparatory subject for state board examinations. A review of the notes kept from the course disclosed that very little attention was given to the pharmacologic action or to the therapeutic application of drugs. A classification according to use was followed. For example, under the single heading, astringents, could be found alum, ergota, galla, adrenalin, and alcohol. Only a very brief statement concerning their actual use in medicine was given. One of the chief aims of pharmacology is to clarify this situa-

*Read before the Conference of Teachers of Pharmacognosy and Pharmacology at the 1939 meeting in Atlanta, Georgia.

tion by study and actual observation of the exact manner of the action of each drug. Each drug in its respective group has its own therapeutic application, and for the most part they are not interchangeable.

It goes without saying that an understanding of the action of drugs necessitates a sound foundation in anatomy and physiology. Most schools are in a position to draw on supporting departments for this assistance, but even so, it should never be taken entirely for granted that the students have all of this information. For the most part, these subjects will be taught by the respective departments without reference to specific drugs. It should be the aim of the teacher of pharmacology to correlate his subject with physiology and anatomy, and to establish very definitely the relationship of the action of drugs to specific parts of the body. Consultation with the heads of the supporting departments relative to what the pharmacy students should have, will be mutually helpful. Schools which are not so fortunately situated should arrange for this prerequisite within their own curricula.

Dr. James M. Dille touched the keynote of pharmacology when a year ago he cited *reasoning* as a definite aim to be achieved. *Materia medica* evoked much criticism because it failed to develop this commendable trait in the students. Immediately the question arises as to how this aim can be achieved in the new course since it is intended that logical reasoning shall be a part of it.

The writer obtained good results in the following manner. From time to time through the year as various groups of drugs, such as the hypnotics or laxatives, were discussed, related proprietaries and prescriptions were taken into the classroom. Without further comment, these were submitted to the pharmacology students with instructions for them to discuss the probable actions and therapeutic values of these preparations from their knowledge of the pharmacology of the ingredients. It was not presumed that they would know all of the contraindications, etc., but it was not very long until most of the students were able to reason out intelligently the actions and therapeutic uses of preparations which they had never seen before. It not only inspired confidence, but also added a feeling that in pharmacology they were getting information which was readily useful in their everyday work in all their courses.

Teaching *resourcefulness* it seems, should be another aim, or objective as it may be, in the course in pharmacology. Perhaps it should be called *resourcefulness* and *technique*, or even better still, to simply call it *knowing what to do and how and when to do it*. This aim is achieved only by actual participation in laboratory experimentation.

The laboratory demonstration is an excellent tool in the hands of a judicious instructor, but it easily becomes the tool by which students may be deprived of the opportunity to develop their own initiative. Granted it is much cheaper and less troublesome for a skilled instructor to perform the demonstration, the fact still remains that most people learn best by doing. This has been thoroughly substantiated by years of observation of student response.

Another aim of pharmacology should be to emphasize by observation the importance of the *factors involved* in the *determination of dosage*. Probably the most frequently asked question in pharmacology laboratory is, "*How much of the drug should I give?*" Unfortunately, this question needs considerable analyzing before the correct answer is obtained. Size, weight, age, method of administration, and other factors must always be reckoned with.

To accomplish this objective, it was found advantageous to include very early in the animal experiments, one which would demonstrate the results of an improperly calculated dose. A favorite example is to write into the instructions a unit maximum dose suitable for a large healthy animal, and to substitute in one of the groups a very small emaciated individual. Almost without fail, that particular group will be embarrassed by severe toxic symptoms or even death appearing in their animal, which is the signal for some enlightening review on the subject of dosage. Following an experience of this kind, rare is the group which thereafter treats an animal without first checking all the factors of dosage. Ordinarily, the writer does not approve of such teaching methods, but it can not be denied that very often one's most enduring impressions result from one's mistakes.

Broadmindedness is something students should develop during their collegiate career. However, as instructors hold classes day after day for the recitation of supposed facts, and usually from a single source, they often defeat the very purpose which they are striving to attain. Pharmacology offers

an excellent opportunity to develop an inquisitive attitude which is conducive to determining for oneself which answer is correct. With excellent journals and texts available in pharmacology, library work should be an essential part of every course of a more advanced nature.

The development of prospective pharmacology students into suitable material for the various fields of pharmaceutical education and research should be a constant aim. Realizing that it would be undesirable and impracticable, because of large numbers and limited funds alone, to attempt to make a finished pharmacologist of every student, the following plan is suggested as a possible solution to the problem of giving advanced work to those who desire and merit this attention.

At South Dakota, the curriculum includes the customary required course in pharmacology, and also an advanced course. It is not difficult to select from a group of students those who possess marked ability in both their classroom and laboratory work. These students are at first allowed to participate in laboratory work as much as they desire. Improvement in the work means that eventually they become group leaders with added responsibility. This does not constitute partiality, as contended by some, unless one chooses to define recognition of ability and industry as such. Rather, it places the whole scheme on a competitive basis among the students, which is as essential in teaching as it is in business. Upon completion of this work, these better students then have the privilege of electing advanced pharmacology in which the classes are small, thereby allowing for additional individual attention. In addition to this formal course work, senior students may also elect pharmacology research, in which they further develop their technique, and gain experience in carrying out an investigation of their own. These students finish, fully qualified to begin regular graduate study. It is well to mention here, however, that this additional instruction consists principally of laboratory experimentation and classroom discussions. The greatest amount of good, it seems, can be gained by the students from actually using every piece of equipment available.

Like every other pharmaceutical subject, the chief aim of pharmacology should be to *increase the usefulness of the pharmacist to the physician*. How fully the subject is fulfilling this need is attested to by the favorable comments of

returning students who have had an opportunity to apply their education in practice. The pharmacist who can supply the answers to the doctor's questions regarding his own stock and actions of new drugs, is the man who will attract the prescription business of discriminating physicians. We teachers should be aware of the good impression our subject has already made, and make every attempt to foster this good will by more thorough instruction in anatomy, physiology, and pharmacology.

In closing, it might be interesting to convey to this group the impressions of a successful pharmacist who completed the *materia medica* course and years later returned to take pharmacology. In his own words, I quote his impressions. "*Materia medica* always dealt with certain intangibles which I could never quite appreciate. Pharmacology explains *materia medica*."

The aim of pharmacology is to bring these intangibles within the range of perceptibility. It has revised the customary, "I think so because I heard it thus" to, "I know, for I was there, I participated, and I observed".

Alumni Assistance To The University

HERBERT BROWNELL, JR.*

New York City, N. Y.

Alumni of the University of Nebraska are proud to note, seventy-one years after the granting of her charter, that

*Herbert Brownell, Jr., is one of Nebraska's most distinguished younger graduates. He is a member of one of New York City's outstanding law firms and has five times been elected to the New York Assembly. This address was delivered at a convocation celebrating the seventy-first anniversary of the granting of the charter establishing the University of Nebraska. While the address was written with the needs of a local institution and a limited territory in mind, the policies stated are applicable to and are of interest to any institution seeking alumni support for its program of education and research. The spirit of the address is so in keeping with the principles that the American Association of Colleges of Pharmacy has been advocating for the support of pharmaceutical education and research by pharmacy alumni, retail druggists, and the entire body pharmaceutic, that the editor made a request for the privilege of publishing the address in this journal. This request has been granted both by Mr. Brownell and the University Administration.—Editor.

she is flourishing and recognized as one of the leading institutions of higher learning in the United States. This Charter Day, when the attention of alumni is focused more than on any other day upon the educational position and progress of the University, finds 50,000 living graduates and ex-students manifesting their interest in the welfare and development of their alma mater in countless ways. By far the largest part of the University—its alumni body—now resides far off the campuses, scattered into every state of the union.

It is a source of gratification to know that at so many other Charter Day meetings being held throughout the country, alumni are expressing their growing desire to keep in touch with the academic life at the University, and to know also that the university administration is represented at so many of those meetings, thus recognizing anew that the alumni may prove of invaluable assistance in maintaining the educational standards at our University and widening its influence throughout the state and the nation.

The New York City Alumni Club, which holds charter number one among the alumni clubs, has asked me to bring its greetings to this convocation. Our alumni club meets on such occasions as Charter Day or Homecoming Day to reminisce about student days in Lincoln and to discuss the future development of the University. We have been delighted in the past few years in hearing addresses from Chancellor Burnett and Chancellor Boucher which have noticeably quickened the interest of our members in alumni activities. Our club members are among those who in the past have contributed to the University a share in the alumni gifts of the Memorial Stadium and the furnishings in the Student Union Building, and are typical examples of the alumni in so many cities who have a genuine desire to see the University recognized as an educational leader.

There is a certain risk in inviting a non-resident alumnus to participate in Charter Day ceremonies on the main campus, for it is a great temptation on such an occasion for an alumnus, especially one who like myself has not had an opportunity to revisit the campus except after a considerable lapse of time, to reminisce about personal events of student days and to prove with facility that the particular four years spent here on the campus were in reality the four greatest years in the history of the Cornhuskers. It is a temptation

for me to follow such a course since nearly every campus walk and building recalls the days from 1921 to 1924 and nearly every student event that is reported in today's issue of the *Daily Nebraskan* has its counterpart in my memory. But such recollections have their proper place only in the more informal gatherings of alumni to celebrate Charter Day; such reminiscing as we may do at this formal birthday celebration must be confined to recording some of the changes noticeable in the University's life as they bear upon the future of the institution.

The most striking change between the conditions at the time of my graduation and the conditions which face the present undergraduates and the more recent graduates, it seems to me, is the change in the relationship between the government of our country and the individual—a change which as we shall see, upon examination, bears directly and forcefully upon the future of the University.

During the past few years a majority of the people of the country decided to cut down the areas in which the individual may lawfully make his own decisions and increase the areas over which the government exercises direct control. As a result, the government in a hundred new ways limits the conditions under which a young farmer in this agricultural state may cultivate the soil and market the products of the soil. In certain segments of business and industry, and in certain professions, the methods of livelihood employed twenty years ago by young men and women upon their graduation have been circumscribed and delimited by governmental regulation. During this short period, each one of us who produces an income lays aside a greater portion of that income for use by government; and each of us is required to save (under governmental supervision) an additional percentage of our wages or profits to be used for the benefit of the unemployed and aged persons.

These recent changes are of intense interest to university students and alumni because they more vitally affect them as a group, it seems to me, than any other portion of the population. The controls and limitations placed by the will of the majority on the methods of production and distribution; the transfer from individuals to government of the power to decide how a large part of daily income and accumulated savings may be used; the decision that a practical

guarantee of a certain standard of living shall be given to certain non-productive groups in the community;—all these changes affect significantly the lives of university-trained men and women. This is true for many reasons. The university-trained men and women in this country ordinarily engage more actively than any other group in the management of agriculture and business. This group, at least as much as any other group, has in the past widened and extended the areas in which individual initiative has played a dominant part. This group, more than any other will be required under the pressure of recent changes, to expend more of its thought and energy in participating in the management and direction of newly created governmental functions.

The economic and social effects of these recently adopted policies are hardly yet evident in the life of the country because these policies are not yet established upon a sound financial basis. They are written into the statute books. By and large, they are there by popular demand. They seem slated to remain there without substantial modification in language. But though the language of the statutes stays without change, the real meaning of the statutes in the social and economic history of the country remains to be interpreted. No method of financing these changes has yet been put into effect and here, it seems to me, is the most challenging problem in our country today. It is in the solution of this problem that the great changes foreshadowed for the next few years will occur.

The government has now assumed a responsibility for giving financial assistance to unemployed workers, but it does not collect the money to discharge this responsibility. The government by statute is under a duty to pay out money to assist in the support of aged persons. But it does not receive the cash to carry out this obligation. The Federal laws state that financial assistance shall go from the government to help physically handicapped persons—for maternal aid—for child care—but there is no cash coming into the government for this purpose. In order to give a cash income to certain classifications of farmers, we can read in the session laws of recent Congresses that financial payments of various types shall be distributed among some agricultural communities. But a deficit exists in the accounts from which such distributions should be made. Elimination

of slums in cities has been approved as a proper function for the use of tax moneys. But sufficient taxes therefor have not been assessed. Wide-spread demands may be found currently for heavy contributions from government to raise the public health standards of the country, both in rural and urban sections. But these demands are not accompanied by fiscal plans to assure their permanency if they should be accepted. The new forms of government regulation of certain phases of agriculture, industry and finance, to which we referred a few minutes ago, also cost money. They require an increase in the tax receipts and the allocation of a greater proportion of the income of citizens for governmental purposes. But the money for all these purposes is, for the most part, borrowed.

Let us assume, as seems most likely, that these new statutes are here to stay. The tendency to extend and enlarge them seems equal to if not greater than any demand to reduce or decrease them. They can only be a flash in the political science pan, and of the most temporary influence in the history of our country, unless a way is found successfully to finance them. Such a way must be quickly developed, approved and put into effect. It is bound to bring changes of substance in the social and economic structure of our government. It will be more of a "revolution" than the so-called "Roosevelt revolution" in the course of which this new legislation was passed to transfer so many occupations and activities from private to public control.

It will be primarily the problem of college men and women to effect this revolution within the framework of a democratic system. Its solution requires the skill born of the study of the history of men and ideas.

Which income groups in the population shall pay the cost of these social services? Which geographical sections of the country will feel the brunt of assuming their cost? A technical discussion of these questions is something that I am not prepared to make, nor would it serve any purpose in this discussion to cite figures and statistics by way of illustration. Two of our top-flight public figures have been engaged in controversy this week over figures and statistics—they both start from the same facts and end up with a difference of something like eighteen billions of dollars, so let us stay away as far as possible from figures and statistics.

Senator LaFollette, who has been one of the advocates of increasing the areas of government control and who is sympathetic to further large extensions of it, has had something to say as to which income groups should pay for these social services. He thinks that the medium and low income groups should pay. He seems to accept the oft-repeated statements that confiscation of the entire income of the high income group in this country would not begin to supply enough to pay the expenses of government at their present level. He may even acknowledge the validity of the conclusions of Mr. John W. Hanes, until recently Assistant Secretary of the Federal treasury, that present rates of income taxation for the higher income group are so great as to hamper material prosperity. In any event, the Senator points to the fact that in England these social services are paid for in large part by the medium and low income groups. He seems to sympathize with the views now being pressed that there should be few or no exemptions among the groups that are thus to be called upon to bear an extra tax load—that tax exempt groups such as governmental employees should be taxed—and that tax exemption upon future issues of government securities should be eliminated. With such a program, substantially all persons with incomes of say \$1000 a year or more would be taxed directly much more heavily than at present if we are to establish upon a lasting basis the existing statutory policies that government should shoulder these social services.

The readjustments which would be needed under any such program would be tremendous and the dangers to continuance of private industry are obvious.

Another aspect of this problem that has received some consideration and awaits solution by men and women of university-trained minds is the question of the method of distributing such a tax load among the different geographical sections of the country. This aspect has been approached very indirectly and gingerly. But, the argument runs, if federal funds are to be distributed for social services and occupational benefits, the federal government should first require all states to levy locally substantially the same taxes at the same rates, the benefits and proceeds to be used for self help. That is, if some states have income taxes and others do not, it is said to be unfair to distribute federal funds to

the states that do not levy the local income tax. Mayor LaGuardia, who has been another one of the advocates of increasing the areas of government control and is sympathetic to further large extensions of it, has indirectly approached this aspect of the problem. He has suggested that the federal government act as tax collecting agent for the states for most of the taxes—the proceeds, or a portion thereof, to be distributed among the states according to a formula to be devised by Congress. In the case of the income tax, to use that tax again as an example, the federal government would levy it as at present, but at a higher rate, and would give credit say for the first four per cent to any taxpayer who paid a state income tax of four per cent. The effect of such a plan, of course, would be practically to force every state to levy a state income tax. And since, generally speaking, the industrial states now levy heavier and more diversified local and state taxes than the predominantly agricultural states, this proposed solution of one aspect of the problem takes on a distinctly sectional and geographical appearance.

Such examples of the problems which necessarily arise out of the changes of the last few years in the relationship of the government to the individual—examples which grow out of our reminiscing of the changes since a commencement day held a generation ago—emphasize the importance of having the university train minds with a view to having its graduates take an active part in public affairs. It is more important for university students and alumni to be active in public life and public affairs than it was upon my graduation day if for no other reason than that government enters upon so many more new fields of endeavor than was the case fifteen or twenty years ago. The most promising possibility of preventing governmental control from becoming bureaucracy and keeping governmental activities within the framework of a democratic system is to have the men and women of trained intellect ready and willing to participate in public service.

Many alumni like myself, I imagine, have been unable for one reason or another to watch with reasonable constancy the changes and improvements that have taken place in the university since our graduation. It is too easy for us to offer advice, forgetting that we do not have a complete picture of

students, faculty and alumni activities. We may, as ex-President Angell of Yale University has phrased it, "have too complete a sense of ownership of the university and carry too blind a conviction of educational omniscience." But there has developed among the alumni during the years since my graduation at least, a belief that the University of Nebraska cannot hold her rank in the forefront of institutions of high learning unless an organized alumni body is willing to give some financial assistance.

It is a fairly familiar story to most of us, yet always worth recalling on Charter Day, how our university attained its high rank in the very earliest years of the development of universities in the United States—attained its high rank because of the outstanding qualities of the educators who were the faculty members in the early days. These scholars, drawn from many states of the Union to the infant University in Lincoln in a brand-new state, were known throughout educational circles as a liberal, cultured, scholarly and able faculty. Many of their achievements are securely recorded in the histories of the development of scholarship in this country. These men and women were responsible for the high educational standards established here. They made the University of Nebraska an institution of first rank. Many of the faculty members remained on the faculty for thirty or forty years, giving their entire life to the University community. No Charter Day celebration would be an adequate one if we did not acknowledge their service to the University. It was my privilege during my college days, because of the close friendship of my father and mother with many of these faculty members, to meet and know well a number of them in the later years of their teaching service in Lincoln and I can truly say, as I know many hundreds of alumni can and do say, that association with these men and women in our student days was the most wholesome and inspiring aspect of the college experiences. The present successors of these earlier faculty members, under the able leadership of Chancellor Avery, Chancellor Burnett and now Chancellor Boucher hold high scholastic standing among the educators of today and deserve and receive today our salute for their unselfish efforts to maintain the University of Nebraska as a distinguished, scholarly educational institution.

Credit is due and willingly given, too, in any review of

the early days of the University to the early generations of citizens of this state who were willing to set aside a generous portion of the income from the resources of the state for the establishment and growth of the University. This devotion to the cause of liberal college training has remained in this state and there has now developed through all the counties of Nebraska a pride in the University, and a belief in the value of the varied and extensive services that it is constantly rendering to the citizens who maintain it.

Throughout the first half century of the life of the University the taxes of the state and the assistance of the federal government were sufficient to carry on the undergraduate work and increase its scope as required by the increasing student population. To some degree also these sources of revenue were sufficient to establish and develop some graduate work of high calibre, and in this way the national reputation of the University has been measureably enhanced. But one of the results of the recent changes which we have been discussing whereby government has taken over new responsibilities for unemployment insurance, unemployment relief, old age assistance, public health service and aid to housing, has been, in my opinion, that a "ceiling" has been placed of necessity upon the share of tax moneys allocable to the development of higher education. This ceiling may not have been consciously placed, and it may not be inflexible, but it is there definitely and permanently. It appears to me that while tax moneys will continue to be available for the normal functions and normal growth of a college with a limited amount of graduate work, they may well not be sufficient for the growth of scholarly graduate work which students, faculty and alumni alike know is needed for a vigorous university community which is constantly called upon to furnish the intellectual leadership of a great state.

None of us, least of all the alumni, will be satisfied to see our University drop behind other universities of the middle west in educational standards just because those other universities may have been quicker to see the necessity of alumni financial support, and to use such financial support to broaden and supplement the services made possible by government moneys.

Alumni interest in giving financial assistance has been

strengthened recently by the action of University and state officials in working out a long range program for increasing the effectiveness of the state institutions of higher education. By reason of the joint action of these officials a Nebraska educational survey is being conducted, and some of the findings and recommendations made to the Planning Board that is conducting the survey have opened avenues of study that certainly should be investigated further. If there is any overlapping of activities between the colleges in the state and the University, and such overlapping can be eliminated, then the tax moneys available for the support of the University can be made to perform a more valuable service to the state. The Committee on Findings and Recommendations in the Nebraska Educational Survey has reported: "The unique contribution of the State University is in providing liberal arts work beyond the two-year junior college and even more in providing opportunities for graduate and professional education. With the development of the proposed program for junior colleges, the State University will tend to reduce its junior college activities. A study of the possibilities of co-operation between the teachers colleges and the State University in caring for junior college students is needed".

It is not within the province of the alumni to chart the details of any such program as is envisaged by this report. It is rightly being left to experts in the field of scholarship, administration and government. But alumni will heartily approve this effort to increase the effectiveness of university instruction, and will be much more willing to assist the University when the knowledge is received that expert thought is being given to careful husbandry of the funds available for university training; and that action is being taken to prevent duplication of services among the institutions of higher learning within the confines of the state.

The report made to the Nebraska Educational Survey to which reference has already been made also states that "Graduate work is the most exacting activity in which any institution of higher education can engage and one of the most vital. It will challenge the resources of the state to provide a great graduate school at the University of Nebraska."

I have discussed with alumni in several states during the

past few months some aspects of the growth of the University and also the conditions under which it will be possible to obtain alumni financial assistance to encourage the development of the forward-looking steps that are currently being taken by the University administration and faculty. These alumni, almost without exception, are interested primarily in the development of graduate work at the University. Without overlooking in any way the importance of the undergraduate courses, they are mindful of the fact that if the University does not encourage and provide facilities for some graduate work of the highest calibre, it cannot truly continue to call itself a university and it cannot furnish to the people of the state the educational leadership that is essential to its welfare. The pride of these alumni in the University rests to a surprising degree upon the maintenance here of graduate research and scholarship that will be recognized as the equal of any in the country. Yet these men and women who are typical of the fifty thousand former students of Nebraska realize, as the educational survey report states, that it will challenge the resources of the state to provide and maintain a great graduate school here.

Further investigation, it seems probable, will show that the same situation exists in the states surrounding Nebraska, and that the alumni and faculties of neighboring state universities are met with similar problems in carrying forward the work of university training. It seems a promising field of study, therefore, to undertake some joint consideration of the problem with representatives of the institutions of higher learning in the Missouri valley. If the resources of any single state will be strained beyond the breaking point by the development of a great graduate school, is it necessarily true that the young men and women of this middle west section should be deprived of the opportunity of obtaining close at hand graduate work of the finest quality? Might it not develop, as a result of such joint discussions as suggested, that over a period of time a plan can be worked out to divide the fields of graduate study among the great centers of learning in this region. State boundaries seem a very artificial limitation indeed as borders in the development of scholarship and research.

If the universities of our neighboring states could join in such a plan, it is believed that each separate institution would

be able to support in an adequate manner certain lines of graduate study and research, so that students in that field would obtain instruction and guidance unsurpassed in any part of the country. In this way this middle western section of the country, which has played such a glorious part in the development of public education in this country, could assure its citizens of an opportunity to participate in graduate work in all fields—graduate work worthy of the best traditions of scholarship.

In order to arouse the steady interest of Nebraska alumni, it will be necessary to develop certain lines of graduate work which will be recognized as the best in the country. In the development of such a program, I believe that widespread financial assistance can be built up over a period of years. It seems evident that the task of providing the professorships, the fellowships and the equipment for such graduate work belongs, at least in part, to the alumni. For reasons which we have been discussing, it seems outside the bounds of probability that tax moneys will be available for such work. Privately endowed and tax-supported universities in other parts of the country receive very material assistance from alumni contributions. In most cases these contributions come steadily each year in large numbers and in small amounts.

Attention has been called during the past month in the press to the fiftieth anniversary of the founding of one of the great university alumni funds—that of Yale University. It is interesting to note that this fund, which has made a remarkable contribution to scholarship, is made up in large part of small contributions. When the fund was first started the sum of eleven thousand dollars was collected. The amount received in each of the years immediately following was less than eleven thousand dollars. But volunteer graduates in each class undertook the job of writing once a year to a list of classmates to tell them of some recent accomplishment of the University and to point out some need, usually in the field of graduate research or scholarship, in the University. Gradually the fund has grown and as it has grown the moneys have been invested so that the income is available to carry on some of the work of the University which its regular sources of income cannot maintain. The endowment fund has now reached the handsome figure of

over ten million dollars, and during the current year over nine thousand of the alumni of the University participated—many of them by giving one dollar—in the building up of the fund. The history of this fund and of similar ones in other universities may furnish some guide as to the way in which Nebraska alumni can assist the University—and thus translate into action that counts, the feelings of devotion and pride that are so strong.

The Aims and Objectives of a Course in Pharmacognosy and How to Attain Them¹

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Regardless of the method of approach the ultimate aim of any course in the pharmacy curriculum is to teach the student the necessary fundamental facts and how to use the facts as tools. The objective is to give the professional fields an educated pharmacist equipped and trained to utilize the knowledge that has been gained by his predecessors. This knowledge is the tool of the efficient practitioner of the profession of pharmacy who must bear the standard and gain the esteem and confidence of recognized professional men in the business and professional worlds.

Pharmacognosy is a course among the least understood in the pharmacy curriculum and at the same time it lacks a definition that is suitable in all cases. Without encroaching upon the teaching of other departments in pharmacy, pharmacognosy includes some pharmacology, pharmaceutical chemistry, galenical pharmacy and often other phases of pharmacy by necessity. Likewise, other branches of pharmacy include pharmacognosy by necessity. In fact, it is almost impractical to draw a well defined line limiting the scope of this subject or other subjects in pharmacy. This ignores the fact that chemistry, botany, zoology and bacteriology are also involved.

¹Read before the Conference of Teachers of Pharmacognosy and Pharmacology at the 1939 meeting at Atlanta, Georgia.

Speaking of the other sciences, it has often been found necessary to supplement the teaching of the scientific departments allied to pharmacy in the schools of pharmacy by offering additional scientific training to prepare our students for our fundamental courses. This is an unfortunate situation in spite of our efforts to improve training and much valuable time in our curriculum can be lost in this manner. I mention this because it often applies to the prerequisites for pharmacognosy.

In considering the aims and objectives of our courses, including pharmacognosy, we should keep in mind some of the well founded criticisms offered by advanced students, alumni and men of experience in the professional and business world. Some departments in pharmacy receive severe criticism and many times the pharmacognosy studies receive their share. Much of the criticism, however, can be ignored as lacking good foundation of fact.

The aims of our courses in pharmacognosy are fundamentally the tracing of the development of the plant or animal product from the embryonic stage of development to the finished commercial product. This applies whether the drug be a part of the organism, an isolated principle or a prepared and finished extract. The names to be memorized, localities to be known, tissues to be recognized, unending list of names of constituents to be recognized, tests to apply and so on are merely stepping stones on the way to understanding the intricacies of pharmacognosy.

The course in pharmacognosy where careful study is made of the facts pertinent to drugs is seldom criticized for it is recognized that the dispenser of drugs should know the sources of his drugs and how they are obtained. The history, scientific classification, uses and similar items tend to keep the student interested. On the other hand, tests of any kind may be criticized without foundation. As teachers, we know the importance of tests for purity and strength and we are quickly able to answer any criticism on this phase of the work. These studies are important to round out the education and training of our pharmacists.

In discussing drugs in pharmacognosy it is customary to use various therapeutic terms to describe the medicinal use or action. These terms are abstract to the individual who has not had training in pharmacology. These terms are

not only abstract to such students but authorities on these subjects use varying terms in such a way that the names are even more confusing. There should be some agreement in terminology in these cases, or, pharmacognosy should omit the therapeutic uses from study or give more detail in the way of a simplified explanation of physiological action and effect in pharmacognostic teaching and texts.

The phase of pharmacognosy which receives the greatest amount of criticism is microscopic pharmacognosy, I believe that much of this criticism is justified as long as a great deal of time is devoted to this subject in the curriculum. Students often come into pharmacognosy without sufficient training to start immediately into the microscopic studies and they must receive special training by taking a prescribed preparatory course.

The great criticism of microscopic pharmacognosy is the impracticability of the course and its uselessness to the finished pharmacist. Our only answer can be that he needs a broad education. However, this training is highly specialized and little used except in highly specialized fields of the commercial applications of pharmacy and some research in the academic field. The number of microscopic pharmacognocists needed is very small. It seems useless to train hundreds of boys and girls as pharmacognocists of this type when so few are needed and there is a greater need for trained workers in other fields of pharmaceutical practice more closely related to the practice of the pharmacy and medicine of today.

I do not mean to say that microscopic pharmacognosy is not necessary. On the contrary, it is an essential part of pharmacognosy as a whole. Personally, I believe that the microscopic studies should be carried along on a less comprehensive scale with the macroscopic studies as an adjunct to the course. The required time for microscopic technique could be partially absorbed in the macroscopic courses and the time thus gained can be used for more useful specific training in such fields as Public Health work, modern drugstore practice, new remedies and even insecticides.

Having mentioned and discussed criticisms to pharmacognosy as a course I believe that I can point out that the aim in pharmacognosy should be to train the embryonic pharmacist in the fundamental facts governing the production, composition (especially the active constituents), the medicinal

and commercial uses of drugs and also tests that control the uniformity and activity of drugs.

The objective of the pharmacognosy and pharmacology courses should be to graduate a person educated to understand the problems in dispensing the materials in the *materia medica* due to properly trained background in these fields. Also, this person should be equipped to intelligently and wisely convey to the physician any useful or undesirable trait of any of these drugs upon demand and in terms of mutual understanding.

To gain these ultimate ends I believe the courses of pharmacognosy should include a minimum amount of microscopic study except for cases where the student is definitely specializing in this field. I believe that actions of drugs should be described in more but not excessive detail in class and in texts so that a better correlation between constituents and physiological actions may be obtained for later studies and shaded meanings in therapeutic terms may be impressed upon the student.

The suggestion of including a little more discussion of the physiological action in pharmacognosy is perhaps an unnecessary encroachment upon pharmacology. However, I believe all the prerequisites and allied subjects are correlated to a certain extent in pharmacognosy just as it has been done to a much greater extent in the courses in *materia medica* in years past and the student benefits by it.

When studying drugs, much can be gained by making a study of the crude drug microscopically using good grade clean drugs of standard quality. When possible the fresh plant material can be introduced when gardens or local flora make this material available. The drug specimens may be powdered by the student or authentic powders may be studied individually or by demonstration in class at the time that the drug is discussed macroscopically. This will correlate the internal and external structures of the drugs and at this point chemical composition can often be demonstrated by appropriate tests. From this point various tests, uses and the like can be discussed. In this manner all the various phases of study can come to the students attention at once in a visual way and can be correlated in the student mind. As a supplement to the work occasional field trips studying local flora for medicinal plants will prove both interesting and

valuable as an adjunct to any pharmacognostical training.

The many detailed problems involved in attaining the aims and objectives are ultimately effected by individual facilities. Hence, to further discuss the attainment of our goals would go into details of laboratory, teaching and library facilities which is beyond the scope of this paper.

Pointers Helpful in Teaching Pharmacognosy

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Pharmacognosy has become such a broad science that it could very well be made a major for a four year college curriculum. How much to include in the course for students of pharmacy is a problem which confronts the teacher of pharmacognosy constantly. We now have the data supplied by the Commonwealth study and the Pharmaceutical Syllabus to aid us.

If we make use of the Syllabus and at the same time bear in mind that by far the greatest number of our students are pharmacy and not pharmacognosy majors, we will be able to present the information which will be most practical and useful to them in their work in the modern drug store.

From a practical point of view, I believe the morphological consideration of drugs is more important than the taxonomic. The druggist deals with crude drugs, not with medicinal plants. He is more concerned with whether a drug is a root, corm or leaf than he is with the family from which it comes. This is not as we would prefer because I am sure most pharmacognocists are very much interested in taxonomy. My most enjoyable hobby is collecting and mounting medicinal plants and I take great pride in my medicinal plant herbarium.

In order to stress the morphological and other essential facts, and with the hope of stimulating interest in drugs, we have adopted the plan of issuing to the students samples of crude drugs to keep as their own. They provide containers consisting of powder boxes purchased from drug stores. Drugs to be studied at each laboratory period are issued at the beginning of the period. At the end of the year each student has a complete set of crude drug samples.

As each drug is studied the following information is written on the label of the container: the official Latin and English titles, synonyms, part used, origin, active constituents and therapeutic properties. The students are frequently reminded of the fact that some of their drugs are poisonous and must be kept away from small children.

After the drugs have been issued and discussed, the remainder of the laboratory period is devoted to individual oral examinations. Each student is called from the laboratory into my office and given an oral quiz of about ten minutes. The student is held for any or all drugs he has studied previously. This, in most cases, tends to encourage or compel the student to constantly review. Since this plan will require laboratory sections to be small, it obviously increases the teaching load of the instructor, but we believe that results fully justify the additional load.

We feel certain the students have been aided immeasurably by this plan. They are much more skillful in the identification of drugs than previously, and they find it much less difficult to learn the essential facts about drugs. They have these drugs in their rooms where they can study and review them constantly.

The plan has also stimulated interest in pharmacognosy. Freshmen and sophomore students observing the juniors studying their drugs and carrying them in suit cases, pasteboard cartons and all sorts of containers, to and from the laboratory, become so interested, that many of them come to me and want to know when they can take pharmacognosy.

In the lecture work we do consider the medicinal plants from the taxonomic angle and use herbarium specimens and living plants from the greenhouse to make that part of the course more interesting.

The Role of Biochemistry in Pharmacy¹

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I shall not attempt to define biochemistry for I loathe definitions. To me knowing definitions is like knowing

¹Read before the Conference of Teachers of Chemistry at the 1939 meeting at Atlanta.

the names of the parts of a machine without knowing how the machine works. The statement of Francis Bacon in his *Novum Organum* is one, in this regard, which has always fascinated me: "... but words for the most part are imposed at the will of the vulgar, and divide things by lines most conspicuous to the vulgar intellect. . . . Whence it comes that great and solemn disputations of the learned often degenerate into controversies about words and names, with which it would have been more advisable to have begun, and to have reduced to order by definitions. And yet these definitions (in things natural and subject to laws of matter) cannot cure this evil, since definitions themselves consist of words, and words beget words".

Essentially, there are three major reasons for the introduction of any course into the curriculum: the course contributes to that rather vague, almost mythical thing we call culture, it renders to the student valuable knowledge in the practice of his trade or profession, and it provides the basis upon which the student may effect some original investigational contribution. Biochemistry, to my mind, meets these needs excellently.

The possible social and other speculative implications of modern biochemistry are so enormous that any teacher whose mind is at all set on broad horizons cannot fail to provide cultural background. The social implications are brought out strongly when one considers problems of general malnutrition and more specifically, vitamin deficiencies. As I observed children's teeth in the Union Bethel Clinic in Cincinnati and so often heard a mother state that her little Johnny had rickets when he was a baby, the social nub of the problem became increasingly clear. Who can help but see, in connection with pellagrous conditions, the almost hopelessness of the situation in terms of medication? After all, pellagra is primarily a nutritional problem which means that it is a social-economic problem.

If we are to subscribe to the gene theory of heredity or some equivalent, then we cannot overlook the work of J. B. S. Haldane and his students in which they seemingly succeeded in tying up specific genes with such definite chemical reactions as methylation, oxidation, acylation and the like. The cultural possibilities of that fact, clothed in a little prophetic imagery, are enormous. There are many

other examples of the cultural value of biochemistry. What can be more intensely fascinating than the speculations which arise from the interrelationships in the field of steroid chemistry? How many of the supposed innate differences in the sexes aside from morphological differences can be attributed to a methyl group? Yes, biochemistry is every bit as culturally satisfying as are the so-called classics.

Now, what about the direct applicability of this branch of chemistry to pharmacy? Pharmacy has long been known as the handmaid of medicine. As a subservient profession, pharmacy trends will always be in a measure contingent upon medical trends.

Until recent years therapy has been essentially symptomatic, but today medicine is undergoing a rapid change. The discovery of new facts and technics in physiology, bacteriology and biochemistry is bringing about this changed attitude. It is now recognized that symptoms are often evidences of pathologies remote from the symptom e. g., allergic phenomena exert parasymphathetic responses quite remote, sometimes, from the site of entry of the allergen. How foolish it is to smear ointments and dermatologic pastes on an urticaria caused by the assimilation of egg.

The vitamins, particularly the B complex, are showing us that queer symptoms occur as the result of interference with cellular intermediate metabolism. For example, in pellagra, Spies has shown that sometimes the symptom is diarrhoea and sometimes constipation, but regardless of which is the case, nicotinic acid clears the symptom within a very short time.

It is my personal belief, and I am not by any means unprejudiced, that biochemistry has made the greatest strides in these studies. This is not because of any superiority of the men engaged in the field, but is due to the clear-cut methods which biochemistry can employ.

Let us investigate the place of biochemistry in the armamentarium of the average pharmacist. If we are honest, we must admit that manufactured pharmaceuticals are, to a large extent, with us to stay. Ready-made tablets, pills and suppositories are not decreasing in popularity, they are increasing. To fight their existence, is to fight our mass production civilization. This means that the pharmacist must substitute knowledge to a large extent for his skill in ex-

temporaneous compounding if he is to exist. If, for example, there is any reason why he should sell vitamin products in preference to the grocer, he must know more than the grocer concerning the qualities of these products and their physiological behavior, or his argument carries no validity.

At Cincinnati we have no facilities for a biochemical laboratory at present; consequently our course is entirely didactic. The course opens with the chemistry of the fats, including discussions of structure and analytical methods of analysis. Since many of these things have already been lightly touched upon, an attempt is made to correlate previous information with the newer. Considerable time is spent on colloidal phenomena and on other physical manifestations. Then, while the chemistry of the lipids is freshly in mind, lipid intermediate metabolism is studied, particularly mentioning pathologies such as the acetone bodies of diabetes, and the like. A similar discussion is centered about the carbohydrates and the proteins. New synthetic methods are discussed, and physical-chemical reactions are stressed along with intermediate metabolism. In protein chemistry, in addition to intermediate metabolism, antigen-antibody reactions are reopened for discussion, and allergic phenomena and enzyme chemistry are touched upon. This discussion of the basic foodstuffs occupies one semester and extends into the next.

During the second semester, energy metabolism is first considered and coupled with diet calculations. The place of minerals in the diet is then emphasized. The iron compounds are discussed with reference to the availability of the iron, and emphasis is placed on the work of Elvehjem showing the relation of iron to copper.

About four to six weeks are spent in a discussion of the vitamins. It is believed desirable to be very thorough regarding the stability of the vitamins, calling particular attention for example, to the effect of traces of copper on vitamin C and the presumed destructive effect of riboflavin on this vitamin. Such things as night-blindness with its traffic implications and the value of vitamin A are discussed so that the student is really qualified to be of assistance to the public. A critical attitude toward the literature is maintained in the hope that the student can aid the doctor in culling the drug-house literature and discarding the chaff. After the vitamins, the hormones are discussed. By this

time the student has sufficient background to understand, for example, the role of insulin and insulin products to a greater degree in terms of sugar metabolism. The sex hormones are given considerable attention and are coupled with a review of the physiology of pregnancy.

Finally, to close the course, a brief introduction to cellular respiration is given. I personally believe, in spite of the newness and necessary confusion in this field, that the results of such highly theoretical work will determine the future of much thought in medicine and particularly in certain pathologies.

I believe biochemistry can contribute much to pharmacy and allied fields from a research angle. Permit me to suggest these problems:

1. There is a tremendous need for better allergens, both as test substances and as curative agents. This calls for a pharmaceutically minded biochemist to attempt the production of enteric preparations of allergic proteins.

2. In the light of the discovery that certain foodstuffs such as cereals produce pathological manifestations similar to ergotism etc., there is perhaps a need to restandardize bioassays in terms of the diet.

3. There is a need for more study of the effect of certain drugs on enzyme systems in order to clear up many anomalies of cellular pharmacology.

4. Since many pharmaceutical preparations are essentially biochemical systems, they could frequently be restudied to advantage in light of newer biochemical concepts.

The Teaching of Analytical Chemistry in Schools of Pharmacy¹

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The purpose of this paper is to present the advantages of teaching a course in qualitative or quantitative analysis in a school of pharmacy rather than in the department of chemistry. Chemistry, pharmacy, and medicine have been closely allied for many years. The pharmacist masters a great deal of chemistry in the process of preparing himself to be a professional man.

¹Read before the Conference of Teachers of Chemistry at the 1939 meeting at Atlanta.

C. J. Klemme¹ in discussing the teaching of organic chemistry in pharmacy schools states: "It is true that the fundamental principles of organic chemistry are the same in any course on the subject, but any teacher dealing with the course knows that certain phases may be stressed or slighted according to the needs of the student. It is obvious that the needs of students in pharmacy, chemical engineering, home economics, and chemistry as a major differ to a considerable extent." This idea can readily apply to the courses in analytical chemistry as taught in the school of pharmacy.

Let us consider briefly the course in qualitative analysis. The chemist is definitely interested in the theoretical whys and wherefores of a chemical reaction. His interests are in the physicochemical phases of reactions. A good course in qualitative analysis will cover both the chemical principles and the qualitative phenomena. The various phases of these will be stressed and developed according to the needs of the students.

If we consider the objectives of a course in qualitative analysis for the pharmacist, they may be summed up as follows:

1. He should acquire an understanding of the value and importance of qualitative chemistry in the compounding of prescriptions.
2. He should possess the ability to recognize incompatibilities in prescriptions.
3. He should possess the knowledge of methods for the correction of incompatibilities and for the compounding of more ethical preparations.
4. He should possess an understanding of the relationship of crude drug constituents, chemicals, and pharmaceuticals used by the physician and pharmacist.

If we were to examine these objectives more minutely, we would see that a pharmacist requires the ability of recognizing and correcting incompatibilities.

The teacher in chemistry has large classes of which a small number will be pharmacy students together with students of chemistry, agriculture, science, home economics, etc. It would be too much to expect him to dwell upon pharmaceutical phases of the various chemicals and reactions which are being considered. The students of pharmacy are perhaps the only ones interested in these phases of the subject. On the other hand, a teacher of chemistry in the pharmacy school who has been trained in pharmacy would

naturally bring into his discussion those problems pertinent to the profession.

A student in the School of Science was in my office recently and asked why these students enrolled in the pre-medical course of the School of Science were not required to take their chemistry in the Pharmacy School.

Newton² states that the pharmacy department expects the following of the chemistry department:

1. An active cooperation with the department of pharmacy for the ultimate benefit of the student.
2. Educational principles which result in true learning.

We agree heartily with Dean Newton in these points, but frequently the class in chemistry is too large for individual attention. The amount of subject matter to be covered is extensive, and the instructor, whose training in chemistry perhaps paralleled his field of interest, does not recognize the application of chemistry to pharmacy. How much better it is to have a course presented by a pharmacist, advantageously applying his pharmaceutical background, than it is to depend upon the chemist whose training does not include the application of his knowledge to the study of medicaments.

The writer can agree with the objection that the courses in analytical pharmaceutical chemistry are not taught by pharmaceutically trained chemists. This problem can easily be remedied by the administrative officers of an institution. If we examine the situation from another angle, we see that the subject matter will require the same amount of time, the same number of instructors and assistants in either of the two departments. It would seem to me, from a truly pedagogical standpoint, that the courses could be more efficiently given in the school of pharmacy.

The quantitative procedures are fundamentally the same in any course in quantitative analysis, yet we have the assay processes of the United States Pharmacopoeia to be used as guides for the analysis of the medicaments contained therein. It is much easier to obtain the interest and curiosity of the student when he can actually see the reasons for the work covered by the lectures and the practical application of them in the laboratory.

We speak of vitalizing our educational procedures and bringing into play more of the fundamental ideas of true teaching. It seems that the vitalization of the course in

quantitative analysis is accomplished more fully by the practical application and use of our "Book of Standards". The aspects of food and drug chemistry are constantly set forth for the students when he uses the United States Pharmacopoeia.

The advantages of teaching analytical chemistry to the students of pharmacy in their own department might be summarized as follows:

1. The educational objectives can be more clearly defined in the school of pharmacy.
2. The course content is more readily vitalized.
3. The classes are not large and consist principally of pharmacy students.
4. The instructor is trained both in pharmacy and chemistry.
5. Individual instruction can be given to a greater degree.
6. The student is constantly brought into intimate contact with the United States Pharmacopoeia, and he can see the practical value of these courses for pharmacy students.

References

- (1) Klemme, C. J., *Jour. Amer. Pharm. Assoc.* 22, 1134 (1933)
- (2) Newton, Howard C., *Jour. Amer. Pharm. Assoc.* 22, 1136 (1933)

How Much Organic Chemistry Does the Present Day Pharmacy Student Need?

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How much organic chemistry does the present day pharmacy student need? My first impulse, after reading some state board examination questions and thinking of some types of present day drug stores, was to answer, "Not any". However, after considering that the chief object of a school of pharmacy is to educate a student rather than merely to prepare him for the state board and that the professional or ethical type of pharmacy is steadily increasing, the answer given in the broad and general manner so typical of freshman students might be, "A lot".

The present syllabus requires a year of general organic chemistry of standard college grade and a semester of so-

¹Read before the Conference of Teachers of Chemistry at the 1939 meeting at Atlanta.

called organic pharmaceutical chemistry. A survey of the bulletins of some representative schools of pharmacy reveals that most of them are adhering quite closely to this minimum.

That the importance of organic chemistry as applied to pharmacy and related courses has greatly increased in the past few years is self-evident, but let us consider briefly a few facts.

Qualitative analysis. Perhaps the only relationship of organic chemistry to inorganic qualitative analysis which had any bearing years ago was the use of dimethyl glyoxime as a reagent for nickel, and the explanation of the necessity for the destruction of organic matter. Now many organic reagents, such as nitroso-betanaphthol and 8-hydroxyquinoline, are commonly used, and the list is steadily increasing.

Quantitative analysis. The steady development of assay processes for organic drugs and preparations is readily traced by comparing the last three Pharmacopoeias. An extensive knowledge of organic chemistry is necessary for the intelligent interpretation of these procedures. The colorimetric determination of pH is another outstanding example of the application of organic chemistry to quantitative analysis.

The chemical aspects of botany, pharmacognosy, pharmacology, and bacteriology have become more highly developed, and they are largely organic in nature.

In pharmacy, new organic solvents, ointment bases, etc., are on the increase. Likewise the increasing use of organic medicinal agents requires a greater knowledge of organic chemistry in order to understand their reactions and incompatibilities.

As far as pharmaceutical chemistry proper is concerned, in addition to mentioning synthetic drugs in general, let me call attention to some specific fields of extensive recent development: alkaloid chemistry, hormones, vitamins, cardiac glycosides, and sulfur-containing chemotherapeutic agents.

Thus it is evident that an increasing amount of organic chemistry is necessary for the pharmacy student in order that he may have a better understanding of many courses in the pharmacy curriculum. Furthermore, the graduate in pharmacy who enters the retail field needs organic chemistry for intelligent compounding and dispensing. He will need it even more if he follows a highly recommended new procedure

and details the doctors in order to build up his professional business.

How is this need to be met? It seems to me that the time is ripe for the introduction into the pharmaceutical curriculum of a course which might well be called "intermediate organic chemistry". Most courses in general organic chemistry have so much material to cover that little time can be devoted to many classes of compounds which are of importance in pharmaceutical chemistry. Some of the material which might be included in such a course is as follows: a more extensive consideration of heterocyclic compounds, alkaloidal chemistry, vitamins, sterol chemistry and sex hormones, and cardiac glycosides.

This suggestion will probably be received with as much enthusiasm as Hitler in a synagogue. "Where can we put it?", many curriculum builders will ask. I wish I knew. Perhaps it might take the place of some course such as window trimming or show card writing, or take the place of an equivalent amount of elective hours. At least it is something to think about in the future if and when pharmacy becomes a five year course.

Pharmaceutical Chemistry in a Flexible Curriculum¹

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From time to time this conference has considered the nature and the extent of the fundamental chemistry courses in the pharmacy curriculum, and occasionally papers have been presented on various single courses in pharmaceutical chemistry. Your chairman has permitted me to present some thoughts on the nature and the extent of pharmaceutical chemistry courses in their relationship to the pharmacy curriculum as a whole.

Most curriculum makers have recognized that the educational needs of their students were quite variable. Indeed,

¹Read before the Conference of Teachers of Chemistry at the 1939 meeting at Atlanta.

we might attribute the coming of the four year curriculum, in part, to the desire of forward looking faculties to clear the way for a degree of flexibility in their teaching. The two year curriculum of fifteen years past and even the three year curriculum permitted no variation from a minimum standard of instruction. It required all of the available time to outline the basic principles of a scientific education. All students, regardless of their prospective needs, were of necessity required to pursue the same courses. Lengthening the curriculum by one year has relieved this pressure slightly, and we may now consider the possibility of introducing courses in applied science to meet an acknowledged need.

The majority of our students still find life's occupation in retail pharmacy, but there is a substantial number of other occupations for which a basic pharmaceutical training is a distinct adjunct if that training can be implemented with a few examples of specialized application. I have in mind the hospital pharmacist, the medical technician, the control chemist in a pharmaceutical manufacturing laboratory, the food chemist of the local and federal governments, and the detailing salesman, to mention only a few. Beyond these, there is a constant demand for persons trained at the graduate level. It is obvious that the needs of all of these occupations cannot be served within the boundaries of a rigid curriculum. It is also obvious that a curriculum which attempted to make specialists in each of these fields of work would require more than four years for its completion. Fortunately, no one expects a four year graduate to be more than well grounded in fundamentals, with an interest in and the habit of study.

Pharmaceutical chemistry should be taught as the applied chemistry of substances used in medicine. Any course in pharmaceutical chemistry has as a prerequisite thorough instruction in general, analytical, and organic chemistry. These necessary basic courses will probably require at least three of the four available years of instruction. Since the time available for electives is limited to the fourth year, this year must be cleared, as much as possible, of required subjects in all departments of instruction. It is not meant by this that any department is to be curtailed in its offerings or opportunities, but that all should have completed their fundamental instruction and be ready at the fourth year level to offer several

courses of applied instruction from which the student may select as many as his inclination and his time permits.

The Chemistry of Synthetic Drugs. The fourth year can not be entirely optional with regard to pharmaceutical chemistry. It is my opinion that no student should graduate without having been introduced to the study of synthetic drugs and the relationship between their chemical constitution and physiological action. The scope of such a course should include official and non-official drugs which are entirely of synthetic origin. You have been privileged from time to time to hear excellent papers on how this subject is taught in various colleges. It is sufficient to say here that there are two principal methods of approach to this subject. The one is to classify synthetic drugs from a strictly constitutional viewpoint, and to use the course as a review of organic chemistry as well as an introduction to the physical properties, uses, package form, and trade names of the drugs themselves. The other method is to classify the material from the viewpoint of therapeutic use, with the principal emphasis on the effect of structural changes on the physiological action. The relative merits of these approaches is beyond the scope of this discussion. My point is simply that this subject matter, taught as you wish to teach it, should be compulsory for all students.

A minimum of two, but preferably three hours for one semester should be given to such a course.

Drug Assaying. The course should comprise the typical assay processes of the Pharmacopœia and the National Formulary. Its aim should be to include every type of chemical assay described in the two standard books with suitable discussions of the application of these assays to other materials, and with comparisons of the official methods with other methods of assay for the same products.

The subject matter should be selected with a knowledge of the content of the prerequisite courses for analytical chemistry. If the examples used in these have been drawn from the official assays, duplication should be avoided. Not only official chemicals and galenical drugs but pharmaceutical mixtures should be included.

The course can be made of practical value by cooperation with the manufacturing operations of a hospital or public dispensary. The drugs and preparations used in the dis-

pensary may be used as samples for assay. The minimum allotment of time for this course should be one didactic and eight laboratory hours each week for one semester.

The optional courses which I suggest as suitable for a curriculum in pharmacy follow.

The Chemistry of Natural Products. This course may be elected with profit by any student, but is particularly urged for the hospital pharmacist, the student expecting to become a detailing salesman, and the student preparing for graduate work. It should comprise a discussion of the important classes of plant principles such as carbohydrates, gums, mucilages, tannins, glucosides, saponins, enzymes, oils, fats, waxes, sterols, essential oils, alkaloids, vitamins, and coloring matter, along with the hormones and glandular products derived from animal sources. The content of this course should be assembled with consideration for the material which may have been presented in other courses of the curriculum. It is apparent that a sufficient number of topics is available to make repetition of material presented elsewhere unnecessary, and the importance of the subject matter is sufficient to warrant a more extensive treatment than is obtainable in the general courses in organic chemistry or drug assaying.

Three hours of lecture or recitation each week for one semester should be given to this course.

Clinical Chemistry. This course should be designed to give profitable study for those students expecting to enter retail or hospital pharmacy. It has been pointed out before by many persons that the quality of medical service available in the towns and smaller cities of our nation leaves something to be desired. One of the needs in such situations is a dependable chemical laboratory where at least the routine examinations of body fluids and excretions may be carried out. The pharmacist, if he would, and if he were introduced to the study and technique of these routine tests, might fill this need with professional and monetary profit. Furthermore, the study of the methods and the technique of biological chemistry is an addition to the educational background of the pharmacist from which he should derive indirect benefits through his contact with the physician and the public.

The requirements for qualification as a medical technologist are becoming more and more specific. The duties of these excellent persons are variable and exacting. It would require

at least one full year of training, after graduation from a pharmacy school, under competent guidance to meet the requirements of the Association of Clinical Pathologists. I am convinced, however, that routine chemical tests on saliva, stomach contents, urine and blood can be taught in much less time. The physician usually has not the inclination to do these, though the younger practitioners, at least, have learned to use the information gained by such tests as valuable tools in diagnosis and treatment.

I propose then that a course be offered in the optional group which will train the future pharmacist to perform these routine tests and, what is equally important, to prepare, to standardize, and to preserve the solutions used in the clinical laboratory.

One didactic hour and eight laboratory hours each week should be allotted to this course.

Qualitative Analysis of Alkaloids and Synthetic Drugs. This course should be designed for the instruction of those intending to be retail pharmacists, hospital pharmacists or detailing salesmen. It should consist of instruction and practice in the isolation, separation and identification of the alkaloids and synthetic drugs frequently handled in the pharmacy. References to standard works and original literature should be frequently made. The qualitative tests of official books and those from unofficial sources should be performed and critically compared.

One didactic hour and eight laboratory hours each week for one semester should be allotted to this course.

Synthesis of Drugs. This course should be for the benefit of students preparing to do graduate work. It should include the synthesis of the moderately complex synthetic drugs. The examples selected should be such that usually more than one step is involved in the synthesis, and the steps should illustrate the type reactions not studied in the beginning course in organic chemistry. As many references as possible should be made to original literature, and frequent individual discussions should be had with the student.

One didactic hour and eight or twelve laboratory hours each week for one semester should be allotted to this course.

I should like to add to the foregoing list of optional courses two more which while not of a pharmaceutical nature may well be included in a flexible curriculum.

Food Analysis. The general information and technical skill to be derived from this course is of value to any graduate pharmacist. It offers opportunity to consider not only the local, state and national regulations concerning food, but also methods and materials used in food processing industries. In teaching such a course, the methods of analysis used should be those of the Association of Official Agricultural Chemists, with frequent references to current literature.

One didactic hour and eight laboratory hours each week for one semester should be allotted for this course.

Physical Chemistry. This is mentioned in the discussion because I believe that for those few students who intend to pursue graduate study in pharmaceutical chemistry an introductory course is a necessity. The didactic instruction in this course should be of standard collegiate grade. The laboratory exercises should be selected with the purpose of broadening the scope of the didactic course as well as to introduce the measurements frequently used in advanced pharmaceutical chemistry. At the risk of being superficial, I will list a few which come to mind. They are the following: the determination of molecular weights by boiling and freezing point methods, rate of hydrolysis, distribution coefficient, viscosity, equilibrium constant, pH, electrometric titration, solubility, mutual solubility, catalytic hydrogenation, and the use of the spectrometer.

The didactic course should be three hours and the laboratory eight or twelve hours each week for one semester.

As an example of how the foregoing courses might be offered I submit the following schedules:

For the student whose interest is in retail pharmacy, hospital pharmacy or in detailing salesmanship.

		Credit Hours	Clock Hours
	<i>First Semester</i>		
Compulsory	Drug Assaying	3	9
*Possible	Chemistry of Natural Products	3	3
Electives	Qualitative Analysis of Alkaloids and Synthetic Drugs	3	9
	<i>Second Semester</i>		
Compulsory	The Chemistry of Synthetic Drugs	3	3
Possible	Clinical Chemistry	3	9
*Electives	Food Analysis	3	9

*The notation "possible electives" is used in this schedule to

indicate that any student may elect any or none of the optional courses offered. It is understood that students preparing for retail pharmacy, hospital pharmacy, or sales work may find courses in pharmacy, pharmacognosy, or bacteriology more suited to their needs than additional courses in chemistry. It is the intention of a curriculum such as I have in mind to permit such elections after careful consideration of the circumstances.

For the student preparing for service in a drug store or food laboratory.

		Credit Hours	Clock Hours
	<i>First Semester</i>		
Compulsory:	Drug Assaying.....	3	9
**Suggested	Chemistry of Natural Products.....	3	3
Electives	Qualitative Analysis of Alkaloids and Synthetic Drugs.....	3	9
	<i>Second Semester</i>		
Compulsory	Chemistry of Synthetic Drugs.....	3	9
**Suggested	Food Analysis.....	3	3
Electives	Clinical Chemistry.....	3	3

**The notation "suggested electives" is used in this schedule to indicate that the student making this general election should be advised to elect one of the optional courses in each semester. This will correspondingly reduce the possible options in other courses.

For the student preparing for graduate study.

		Credit Hours	Clock Hours
	<i>First Semester</i>		
Compulsory:	Drug Assaying.....	3	9
***Recommended	Chemistry of Natural Products.....	3	3
Electives	Physical Chemistry.....	5	11
	<i>Second Semester</i>		
Compulsory:	Chemistry of Synthetic Drugs.....	3	9
***Recommended	Synthesis of Drugs.....	3	9
Electives			

***The notation "recommended electives" is used in this schedule to indicate that a student preparing for graduate study in pharmaceutical chemistry should be advised to elect all of these options. As a consequence, the available options in other courses will be limited to the few which are considered as indispensable to all graduates from a pharmacy curriculum.

In suggesting the foregoing list of courses to be offered as optional in addition to the two which I consider essential to the educated pharmacist, I realize that there are other courses which could be described with as much propriety as the ones

selected. I shall be much interested in your suggestions or in the criticisms of those which I have proposed. I assure you that they will be received gratefully.

Chemistry Courses in Colleges of Pharmacy¹

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Perhaps one of the greatest single distinguishing characteristics of modern education is the continual emphasis placed on educational methods and psychology. It begins in the elementary schools, where it almost appears that the teacher's eligibility is a function of the number of so-called educational courses he has taken. A similar situation prevails in the high schools where the selection of the teacher is made, not on his training and proficiency in the courses he will teach, but almost solely on the basis of the credits which he has accumulated in the department of education. Legally the man with a degree in education can, in most states, teach anything, e.g., astronomy, art, science, literature, mathematics, history, commerce, languages, or what have you. Giving all due credit to the professional educator and his legalistic requirements, it is time that the peculiar situation be recognized for what it is. We are told, in effect, that the teacher need not know his subject matter so long as he is familiar with modern teaching practice, theory, and methods. Imagine studying violin with anyone whose primary qualification is his degree *cum laude* from Teacher's College!

This notorious situation was the subject of a special report submitted to the American Chemical Society at Kansas City in 1936. The chairman of the committee was Professor R. A. Gortner from the University of Minnesota. Among other things, this report pointed out that according to present legal standards for high school teachers not a single Nobel Prize Winner in science can qualify! However, the matter of teacher qualification for the primary and secondary schools need not concern us here, it is true, but it may well serve to

¹Read before the Conference of Teachers of Chemistry at the 1939 meeting at Atlanta.

remind us that perhaps there are questions about the qualifications of the teachers of chemistry in our colleges of pharmacy. While I hope to come back to this later, I may say that first of all he should be a chemist.

In order that we may better understand each other as we take up this problem of teaching chemistry, it may be well to repeat again several important points. First, the present course in pharmacy is of full college level, requiring four years and leading to the baccalaureate degree. The pharmacy school enjoys a rating and rank on a par with all other departments in the university. Second, pharmacy is a branch of the public health profession. It is a profession in spite of the fact that so many of our American drug stores look like a hybrid "department-and-five-and-ten-cent store", which also fills a prescription occasionally. If it is true that the pharmacy curriculum is of collegiate level and is designed to prepare the student for a vital public health function, then it seems trite indeed to ask: "What caliber of training shall we give?". There can be only one answer: "The best possible, of collegiate level in every respect."

In the improved curriculum of today we find subjects such as English, composition, foreign languages, mathematics and other non-professional courses. Surely every one interested in the professional and cultural progress of pharmacy must be happy to see these included. Each of the subjects is taught by a man properly qualified. In literature, for instance, *The Merchant of Venice* and *The Autocrat of the Breakfast Table* are presented to pharmacy students just as they are to the engineers, future business men, prospective teachers, and so on; the credit earned in such a course is acceptable for transfer without loss to any other department in the university or even to some other college. The same may be said of all the other academic subjects; they are all on the soundest basis possible.

Now we come to chemistry, a subject which is of fundamental importance to the practicing pharmacist. The pharmacist is justly proud of the fact that his is the profession out of which modern chemistry developed, and he points with pardonable pride to the contributions which his professional ancestors have made to chemistry, for it was the most natural thing in the world for the apothecary to become interested in the composition of matter and its behavior. Many

of the old masters in chemistry were themselves apothecaries, or they obtained their training from one. By the same token it is equally proper and logical that the chemist of today should be interested in matters pharmaceutical and medicinal. Yet in spite of their common heritage, chemistry and pharmacy have grown away from each other. In fact it may be said that chemistry pulled ahead of pharmacy. This may be very disturbing, but it is a matter of history, and there is little we can do about the record except to ignore it or to face it squarely. We may, however, profit from this condition if we are so minded. Personally I am quite optimistic, for pharmacy standards are advancing so rapidly that the gap between the two is diminishing, and soon we hope that, so far as pharmacy's interest in the chemistry of things medicinal is concerned, it will be eliminated altogether.

In order better to appreciate what has happened, let us consider from another angle. We all know that chemistry is a tremendous science. The American Chemical Society, for instance, with its membership of more than 22,000, divides its scientific interests into eighteen main subdivisions. Thus it becomes obvious that a chemist naturally identify himself according to his specialty, say as food chemist, rubber chemist, sugar chemist, and so on. Regardless of individual specialization, however, all chemists have substantially the same fundamental training in the basic courses, namely, inorganic, organic, analytical and physical chemistry. As a rule it requires the student four years to take these courses, although during that time he has opportunity to take other work as well. The essential point, however, is that here are certain fundamental courses, given over a period of four years, without which it is difficult for the graduate to establish himself as a competent chemist. Specialization comes after that.

Then we come to the "Pharmaceutical Chemist" whose title is anomalous indeed. He somehow does not stand on a par with the other kinds of chemists. Why? In seeking a probable explanation for this, let us turn back, not so many years, to the time before the regulation course in pharmacy was increased to four years, and before the B. S. degree was generally granted. With the completion of the two or of the three year course, many colleges at that time conferred the so-called Ph. G., or the Ph. C., degree, the latter being the

degree of "Pharmaceutical Chemist". We cast no aspersions on the character, quality, or the amount of work required for the Ph. C. degree, but it is quite apparent that even the best student with but two or three years of college work is less adequately trained in chemistry than is the chemistry major with his regular four year course. Not that alone, but the candidate for the Ph. C. degree was trained not primarily in chemistry but in professional pharmacy. Hence, the "Pharmaceutical Chemist", in spite of the title conferred upon him by his Alma Mater, is seriously handicapped as a chemist from the very beginning. The trouble, let me repeat, was neither with the student nor with his training, but with the unfortunate designation of "Pharmaceutical Chemist".

This situation was unpleasant for both the pharmacist and the chemist; it tended to represent things as they did not exist. It is, in a large part, the answer to those who ask: "Why are the larger pharmaceutical houses engaging for chemical research men trained in schools of chemistry rather than in the colleges of pharmacy?". Not even a diploma can make of a man something he is not. It is only sound, hard, and common business sense to employ for a specific purpose the man who is best qualified, and it is only when our men coming through the pharmacy schools have a chemical training of highest quality that they can logically be considered for research positions.

If we will but recognize things as they are and then modify our courses accordingly, all will, I feel confident, become adjusted automatically. Our "Pharmaceutical Chemist" of the future must be trained as fundamentally as is every other chemist, and then, because of his specialization along pharmaceutical lines, he will become all the more valuable in his selected field.

While on this general subject may I call your attention to another matter which deserves serious consideration. The American Chemical Society has established a committee to draw up acceptable standards by means of which it hopes to establish a rating for the chemistry department of every university or college in the country. This committee is functioning somewhat along the lines of the accrediting agency for the schools of pharmacy. Since there is no state or national licensing of professional chemists, the American Chemical Society proposes to use this means for informing the pros-

pective student of where he may go with a favorable prospect of being graduated as a chemist in good standing. We will, I am sure, all applaud such a step, but does it not impose upon us, in the schools of pharmacy, the responsibility of giving courses in chemistry which will at least come up to these minimum standards of the American Chemical Society? If we do less, have we the right to complain if our graduates do not get the chemical jobs? On the other hand, if there is anything unreasonable in the recommendations which this committee is proposing, now is the time to discuss it. If the pharmacy college proposes to give less, or something different, then let us openly say so and frankly state our reasons. Let us not pretend one thing and do another. Personally I feel that the chemist who is dealing with health and medicine should be trained not less but more than the average specialist.

The pharmacy student is entitled to the best possible instruction and training in chemistry. Subjects which he takes must be on a quality level with those given to chemistry majors, or should his chemistry credits be less acceptable for transfer within the university than his English or his mathematics? Furthermore, does matter behave differently for the pharmacist than it does for the engineer or the astronomer? Do the principles of analysis change because one examines a drug rather than a mineral? What is there about an alkaloid which distinguishes it from organic bases in general? While it is true that in many instances medicinal products may be employed to illustrate chemical principles, this is true only because of their chemical and not their drug properties. The student must be trained basically. For example, from its structural formula the student should be able to recognize promptly certain features about an organic medicinal of known structure. Cocaine is a tropane compound and its chemical instability in solution may be accounted for by the hydrolysis of either or both of the two ester groupings.

So much for the subject matter. Now for a few words about the teacher. I have already indicated that if he is going to teach chemistry, certainly he ought to know chemistry. I suspect that if we had a more objective way in which to evaluate the teacher, we should have less occasion to be concerned about professional education courses, teachers' colleges, syllabuses, etc. It is not my purpose to attempt

what others more capable than I have been unable to do. But I shall take the liberty of raising several questions.

How seriously do teachers of chemistry, in schools of pharmacy, take their chemistry? Are they keeping their courses up to date? Are they making any original contributions to the progress of medicinal chemistry? How many are members of the American Chemical Society and attend at least some of its semi-annual meetings? The American Chemical Society represents the best in American chemistry, and our pharmaceutical chemistry teachers owe it to themselves to take part in its activities.

What I have endeavored to say is this. Chemistry to a very large extent grew out of pharmacy, and it will be unfortunate if the bond between the two is not strengthened. Therefore, as we discuss the chemical training of the pharmacy student, let us say without hesitation and without equivocation that it must be, first, basic and the best obtainable and, next, specialized. But above all, let us as teachers never forget that the student leaving our classrooms and laboratories is the testimonial of our efforts. Let us strive to give him an opportunity of accomplishing that which will make us proud of him.

Term Papers for Commercial Pharmacy Students*

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For the past five years, the College of Pharmacy of Ohio State University has had a curriculum that permits a limited specialization. During the freshman and sophomore years, all students pursue the same studies, but at the beginning of the junior year a slight diversification is permitted. This specialization does not eliminate any of the basic fundamentals required by the syllabus of the American Association of Colleges of Pharmacy. The difference between the two fields of specialization thus created lies in the selection of certain commercial subjects instead of a foreign language, physics, or microscopical pharmacognosy. The commercial subjects

*Read before the Conference of Teachers of Pharmaceutical Economics at the 1939 meeting at Atlanta.

permitted as electives are the general service courses of economics, political science and business organization, offered by the College of Commerce and Administration to the University at large, and one course given in the College of Pharmacy on drug store management. This latter course is open only to pharmacy students.

The two fields of specialization are called The Pharmaceutical Chemist—Registered Pharmacist and the Registered Pharmacist courses respectively. All students receive the Bachelor of Science in Pharmacy degree upon graduation. A thesis carrying three hours of credit is a prerequisite for graduation in the pharmaceutical chemist field, and a term paper without credit is required of the registered pharmacist. The thesis is a minor research problem involving laboratory work; the term paper requires only library research or the compiling of facts and statistics through personal observation of the commercial drug trade, or both. No actual laboratory work is involved. This requirement of the presentation of a thesis or of a term paper as a requisite for graduation is justified upon the following grounds:

- I. It forcefully focalizes the attention of the student upon one particular problem, and brings into play all the resources of logical thinking and deduction that he may possess, in attempting to view the problem from every angle that he might accomplish its solution.
- II. It recrystallizes, as it were, all of the requirements of good form and good usage and the mechanics of professional writing which the student had already learned in his freshman year, but has since forgotten.
- III. The writing of a professional or semi-professional paper after four years of college training stimulates the ability to deduce facts or conditions from other facts or conditions which are granted or known. This ability is greatly limited in students during the freshman year.
- IV. It gives added training in what might be called library technique at a time when such training is of particular value for after-college needs. The need for writing a professional report of one kind or another continues even after college days are over. Writing is definitely a part of professional life, even though it be only the writing of a business letter or of copy for an advertisement.

For these and other reasons, then, the value of writing a thesis or term paper during the senior year is of particular value to the graduating student.

In order that the value of writing the paper be not lost

to the student, every step in its production must be carefully supervised. The semi-professional paper should be under the supervision of one instructor, and the thesis or professional paper under that of another. Such an arrangement is far more satisfactory, for both the student and the instructor, than if one man supervises the writing of both types of papers.

At Ohio State University, the pharmacy student really starts working on his senior paper in the third quarter of the junior year. All students are required to take Pharmacy 428, a course which is designed to familiarize them with the technical literature of pharmacy, chemistry and related subjects. During the quarter's work, standard methods of abstracting and note taking are emphasized. Each student is required to turn in a large number of abstracts upon articles dealing with pharmacy and chemistry as they occur in current journals. Lectures are also given upon the use of the library in discovering available material upon any assigned subject. The departmental librarian usually takes the place of the regular instructor for this purpose. Books, periodicals, catalogues, and indexes are located. The use of the various sources of information is explained. This explanation covers the use of:

- (1) The Readers Guide
- (2) Pools Index
- (3) The Annual Magazine Subject Index
- (4) Chemical Abstracts
- (5) The cumulative index of the Journal of the American Pharmaceutical Association, and of other professional magazines
- (6) The New York Times Index
- (7) The Industrial Art Index
- (8) The International Index

The unfamiliarity of a subject in all of its various aspects, some of which are entirely unknown to the student, may cause a number of very important articles to be overlooked if only the indexes are consulted. The bibliographies of each article or book are carefully studied for further material upon the subject, as it was compiled by previous workers in the same field of research. Bibliographical encyclopediae are available and can be used as a starting point, but the bibliographies given are usually very short and incomplete.

Reviews on the best methods of recording and organizing this assembled material and upon the mechanical set-up of

the finished paper are also given. Each student is then assigned to a faculty advisor, and a topic for his final paper selected. Thus all necessary explanations have been made just before the opening of the senior year, but in order to obtain full credit for Pharmacy 428 the student must turn in to his advisor a preliminary outline of his paper and the bibliographical material which he has been able to find. This outline is checked, and a conference period arranged. At this conference, improvements and additional material, if known to the instructor to be available, are suggested. A second conference is arranged to take place during the first quarter of the senior year. At this second consultation, the first complete draft of the paper is submitted. Instructor and student together check for sequence in development and details of organization. One of three possible arrangement of topics is followed, namely:¹

- (1) Time or chronological order: This is the easiest and perhaps the most natural order of development for the student who has more or less difficulty in writing.
- (2) The progress order. A natural method of use if a manufacturing process or some commercial problem is being investigated or described.
- (3) From the known-to-the unknown order. This is the most difficult plan of development for any but the most skillful writer, but is the best to use if the paper is technical in character, but written for the layman. The semi-scientific paper is usually written in this style. It requires a more detached point of view toward the material, more recognition of the reader's lack of knowledge, and greater selection of details to make the account accurate, clear and vivid. This is the method to be used if the paper is to be presented before a club or before an audience of non-professional people.

While the use of the first person, active voice is more natural for the inexperienced writer, the third person, passive voice is preferable, since emphasis is to be upon the matter being discussed and not upon the writer. The impersonal attitude is better than the personal for either the scientific or the popular paper.

The final copy of the paper is due one quarter before graduation. It must be typed. This copy is proof read for spelling and typographical errors.

While students rather dislike writing a lengthy paper,

¹English for Students in Applied Sciences: Harbarger, Dumble, Hildreth and Emsley, McGraw-Hill Book Co. Inc., 1938.

especially during their busy senior year, they readily admit the value derived therefrom. Many who made good grades during their freshman year in English find to their surprise that they have great difficulty in expressing themselves clearly on paper. We are, therefore, of the opinion that the writing of either a thesis or a term paper as a requirement for graduation has a distinctly educational value for the student. It serves as a means of recrystallizing those principles of good writing which were didactically taught during the earlier college years. Good English is a good habit for the student, the salesman, the executive, and every professional man.

Education and Creation in Pharmacy Business Courses*

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As one might assume from the title, it is the contention of the author that students of business courses in colleges of pharmacy may create as they learn. There is an implication also, that while this is possible, the practice is not widespread if used at all in most of the pharmacy schools. However, we are beginning with a conclusion so let us first trace the development of the teaching method from its simplest form.

In simplest form, teaching is telling. It is a situation in which the student is entirely passive, and wherein education must come from the ability to remember spoken words. A step of development is the addition of recitation to the telling process. According to this system, the teacher tells, and then asks the student to repeat. The ability to repeat is supposedly proof of education. In the next step, teaching is supplemented by laboratory work, a doing process, which is under constant supervision during the doing. Up to this point, the student has not been forced to use creative faculties.

*Read before the Conference of Teachers of Pharmaceutical Economics at the 1939 meeting at Atlanta.

although he may have done so on his own initiative. His goal is merely to reproduce that which he has heard, or to follow directions explicitly. The fourth step in the development of the teaching process is the introduction of the "case method". This is a method most commonly used in law courses and very recently adopted by other schools. The method consists of introducing the student to many cases or records of actual application of principles of the subject being taught. The goal of the student is to recognize and isolate the principles under the direction of the instructor. The instructor's main function is to prevent wrong deductions. The fifth and most recent teaching method is that of creation. The increasing publicity given to schools in which students create, makes an enumeration of them unnecessary. The claim made for this last method of teaching is that students learn not much, but very thoroughly. What they learn are basic principles rather than superficial applications. The teaching method is guided by practicality rather than theory.

The teacher of pharmacy business courses should incorporate into his activities the fourth and fifth methods of teaching in so far as they are applicable to the subject. This is another way of saying that creation, other than of the laboratory type as described above, should be more prevalent than it is at present, for the maxim in psychology, namely, that the best way to learn is to do, applies here as forcefully as it does anywhere. Some pharmacy colleges have already made this advancement by the use of model drug stores; miniature drug store fixtures and floor plans; special bookkeeping problems; buying exercises during which the student uses current catalogues of both manufacturers and wholesalers; space for window dressing in both the crepe paper and fabric work; an assignment for proprietary products complete in formula, package, and advertisement; problems in work-hour schedules for drug stores of a particular size; problems in insurance and investment; leases for a hypothetical drug store owned by the student; and many others. By application of their ingenuity, the seventy to eighty-five business teachers in pharmacy schools should, in the future, enlarge this list easily.

A second interpretation may be made of the title, which is also a thesis of this discussion. It is that as pharmacy business students learn, they should create. The creation

should be not only for their own immediate use, but also for the use of those in the profession.

In spite of the encouraging increase of economic studies and the disclosure of scientific facts pertaining to the business side of pharmacy, there is a decided lack of information when the subject is viewed from the scientific angle. No attempt is made here to imply that business will ever completely leave the category of arts and join that of sciences, but it is true that much of business which is today classed as art under such titles as "trade secrets", "special knacks", "tricks of the trade", etc., may be reduced to scientific principles, whether that science be mathematics, statistics, psychology or economics.

It should be an unwritten law that every teacher, either by his own efforts or in conjunction with those of his students, especially in a subject so undeveloped as business, should add at least one fact to the store of knowledge in that subject every year. The contributions may be as seemingly insignificant as the following: the number of professional displays in drug store windows of a community in any given year; the average number of hours that a pharmacist works at his profession each week; the average time consumed in compounding a particular prescription or class of prescriptions; the average price of prescriptions. Upon the collection of a great many facts on any point, the discovery of a principle is made possible. Unfortunately, this practice has not prevailed among teachers and students of business subjects. This perhaps is due in part to the fact that the teacher of the business course also teaches another subject which is considered by him to be the more important, or which consumes most of his time and energy. This feeling is especially fostered by business teachers in pharmacy schools whose faculty looks down on commercialism, or business, and fails to see that by such action it is helping to destroy the professional practice of retail pharmacists.

On the basis of a long-time plan, a business teacher may, with the help of his students, create an interesting, instructive, and practical business course. Under his direction, short-time co-operative efforts of his students can produce case-books, surveys, material examples of almost any division of his subject, mathematical tables for special application, and any number of other useful teaching and library tools. As

samples of what can be done in this connection, the author offers the following list of accomplishments of the students at Massachusetts College of Pharmacy:

(1) A survey was made of the physical equipment of the "front of the stores" of many Massachusetts pharmacies. With each student analyzing the drug store nearest his home, his class and all future classes in business are provided with a collection of data on location of fountain, left and right hinged doors, size of floor space, presence or absence of fountain stools and ice cream service tables, location of telephone booths, and many other similar facts.

(2) A collection of pictures and photographs of drug store window displays was accumulated. These displays are classified to conform with the types enumerated in lectures on the subject.

(3) A collection of proprietary drug labels was procured. This collection will be especially interesting in a few years when labels will have changed radically because of the new Federal Food, Drug, and Cosmetic Act.

(4) A collection of catalogues, descriptive literature, and price lists of pharmaceutical products, drug store equipment, and accessories was acquired.

(5) Mathematical calculation tables were compiled for the quick determination of the range of expenditures which can be made for each type of expense in a drug store having a known sales income. These sheets show calculations of $1/10$, $2/10$, $1/2$, 1, and every successive full per cent up to 35, and then from 60 to 75 per cent for every size store with a weekly sales income from \$50 through \$1000 a week, in steps of \$50 at first and then in \$100 units. Columns are provided for daily, weekly, monthly, and annual amounts for each of these per cents. With such a collection of tables, a student can determine whether or not any drug store is operating profitably by comparing the expense sheet of the business in question with the corresponding income sheet of the mathematical tables. Thus, the student is relieved of tedious mathematical work and is permitted to concentrate exclusively on principles of good store management. With the aid of these tables, a dozen problems can be solved in the same amount of time ordinarily consumed in solving one by the usual method.

(6) A series of percentage interpretations of business surveys, dealing with numbers only or with numbers when the survey deals with percentages only. A most recent example is an interpretation of the Curtis Publishing Co. survey.

(7) A collection was made of the various forms of retail advertisements used by druggists. This includes such common forms as circular letters, labels, newspaper advertisements, and dozens of others.

(8) A cost-per-dose calculation for several hundred of the common front store drug products was worked out.

Before a teacher undertakes any such creative work through the student body, he must consider well the following:

(1) Will the solution of the problem be of any practical value?

(2) Is the material readily available to students, and how much time will the collecting consume on an average with each student?

The proportion of such creative work in the curriculum must, of course, be limited. It is recommended that no more than two projects be undertaken in any school year.

(3) Are there any real objections to the scheme?

(4) Is there a method of checking the accuracy of the students' findings?

In the mathematical tables, of which there should be many in the final collection of books, the check and recheck is possible by assigning the same calculation to three different students with the instruction, of course, that each one's work must be his own, and that no comparisons should be made. Students will readily co-operate when they know the purpose of the undertaking, and any inaccuracy in calculation can be easily discovered by comparing all three solutions of the same problem. The triple copy will save the teacher many hours in the checking process. If but two copies are made, and one is wrong, the check for accuracy cannot be made at a glance. All copies are used, for several books are made. Wherever possible, students' findings should be recorded on standard mimeographed forms. This action will make comparison of one sheet with another, or a totaling of the findings of all students, a relatively simple matter since identical material will be found in the same place on each report. It is the task of the teacher to create a form for each undertaking. More than a dozen forms have been created by the author, any or all of which are available to interested parties.

Since the plan of creative work in business courses has been in progress but two years at the Massachusetts College of Pharmacy, no survey of any size has been undertaken. However, if the next several years prove as successful as the last two, it is hoped that preliminary ground work for some sizeable survey may be laid by the teacher during the summer months for solution by students. Since appropriations are rare for purposes of commercial research, the finding of reliable facts is likewise rare, and will remain so unless this or some similar co-operative plan of research is instituted. This places the obligation of research upon colleges and educators. Business research made by private concerns is very apt to be biased in their own favor, even though accurate arithmetically. It is possible, for instance, to imply a fact which is not so, merely by the omission of part of the

findings, or by classifying findings in an unorthodox manner, and by such action giving undue weight to an otherwise insignificant item. Thus, conclusions which are not at all supported by the actual facts may appear to be true.

It is the sincere hope of the author that educators realize the subtleness of propaganda in such private researches. Once this is realized, along with the fact that students are willing, eager research workers, findings of value for all of retail pharmacists will result.

An Experiment in Teaching Accounting to Pharmacy Students*

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This is a progress report on some experiments I have been conducting in the teaching of accounting to pharmacy students. I hope it will be of interest to those of my colleagues who are engaged in this work, and I shall be especially grateful to them for criticisms and suggestions.

The amount of time which is available for teaching accounting at our college is limited, and I am sure this is true also in other colleges of pharmacy. It is possible to present in one term of two or three hours weekly a survey of general accounting principles in a manner which is satisfactorily complete and informative. My experience in teaching a course of this kind to pharmacy students has been, however, that, with the multiplicity of other courses requiring their attention and time, they do not gain from such a survey course a sufficient understanding of its applications to the record keeping problems which are met in the conduct of retail drug stores. My own associations with drug stores in the past 16 years have demonstrated the unquestionable importance to pharmacists of an understanding of how to apply accounting methods and principles in the daily conduct of their stores and of the costly losses which occur from a lack of this understanding.

In giving courses to pharmacy students, we are fortunate as teachers in that virtually all of our students have had prac-

*Read before the Conference of Teachers of Pharmaceutical Economics at the 1939 meeting at Atlanta.

tical experience by working while attending college. It therefore seemed to me that the successful teaching of accounting to pharmacy students in a manner which would arouse their interest in the subject, along with the recognition of its vital importance in the practice of retail pharmacy, required that this practical experience which the students have should be considered in the teaching of the subject. In an effort to attain this objective, I have worked out what is really a modified "case" system, using the actual transactions which occur in a drug store. There is, of course, nothing new about the use of illustrative material in the teaching of accounting to pharmacy students. I have tried it in various forms, and, while I found that the mechanics of recording these transactions could be readily understood and quickly applied by the students, it proved exceedingly difficult to create from a series of disconnected and isolated transactions any interest in the meaning and usefulness of accounting records. Ultimately, I decided to use as a "case" the complete records of a drug store for an entire year. Because of the limited time available for teaching accounting, it was necessary to choose a drug store with only a modest volume of sales in order not to burden the students with too much clerical work.

The store chosen was one which had an annual sales volume of less than \$10,000. The records which the proprietor presented showed separate sales totals day by day for his drug, soda, and cigar departments, and he maintained a complete and accurate record of all his expenditures. It happened that the proprietor was heavily burdened with debts resulting from bank loans and the purchase of equipment on the installment plan, thus providing practice in keeping records of this type of transactions. The complete records of this store for the entire year were transcribed to mimeographed sheets. Two months' transactions were assigned as each week's home work. It was found that two or three hours weekly were required by the students to transcribe these records in proper accounting form, showing monthly sales totals by departments, monthly expenses, merchandise purchases for the month, changes in accounts payable and notes payable, and cash on hand. I shall be glad to send a copy of the complete set of lessons to any instructor who is interested.

This experiment using as a "case" an entire year's records of a drug store produced results which were exceedingly gratifying. Even in the purely mechanical work of

putting the transactions into proper accounting form, the students displayed an enthusiasm and interest which was most pleasing. I think this enthusiasm and interest was created because the students recognized each transaction that they recorded as genuine and which was strikingly similar to those they had observed in their work in drug stores. Consequently, they became very much interested in the results of their work. It demonstrated that a drug store with a sales volume less than \$10,000 a year is one in which satisfactory earnings are virtually impossible. They also saw that the luxury of a relief pharmacist one day a week cut into the proprietor's income to an extent which left for the proprietor earnings which were far less than he would have obtained as an employed pharmacist with no investment and no ownership responsibilities.

It was also possible, from the completed records, to see how the proprietor's earnings could have been increased by a more effective control of other store operating costs. There also appeared from this analysis an indication that, in the unavoidable idle time which occurs in the operation of a store of this size, the proprietor might be able to increase his income by manufacturing in his store some of the preparations which it appeared from his records he was buying ready made.

The store records were kept by each student in one columnar record book. Directions for the proper entry of the records from the lesson sheets were printed in the book and were, incidentally, the same directions which go forward to drug store proprietors who use this book for their own store records. While these directions could have been supplemented by classroom instruction, it turned out that the directions were sufficiently clear without any additional explanation.

The principal problems apparent from our classroom discussions were arithmetical differences resulting from errors in addition and subtraction. The occurrence of these errors served as a demonstration to students that manipulative skill in accounting is as important as it is in operative pharmacy or in chemistry. The columnar book which I developed for keeping drug store records has been in use for several years now in drug stores throughout the country. In this "case" method of teaching accounting to pharmacy students in the manner I have described, it likewise proved to be by far the most satisfactory method I had ever used. I certainly do not

want to give the impression that this is the last word in the teaching of accounting to pharmacy students. The store I used as a "case" is located near Philadelphia; consequently the names of suppliers used were familiar to most of the students and this, undoubtedly, added to their interest in the work.

This store happened to be one selling exclusively for cash. In many drug stores in all sections of the country, credit sales are an important part of the total sales. I therefore think that an ideal "case" for use in accounting instruction would be a store in which both credit and cash sales are made, thus permitting students to analyze the trend of accounts receivable, and to learn how to recognize dangerous trends in credit sales. Additional instruction is desirable not only in recording the trend of credit sales, but also in the most practical methods of billing credit customers for their purchases, and in collection methods. It is also desirable to analyze purchases as well as sales by departments, and to give practice in the preparation of federal and state income tax returns.

In this presentation of accounting methods to pharmacy students by the "case" method, there certainly does appear to be an opportunity to teach accounting in a manner which creates far more interest and understanding than is possible by a course in accounting theory, or by a course which is not as directly related to the immediate needs and interests of pharmacy students.

Pharmaceutical Economics?*

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The question mark in the title may be variously interpreted; it may suggest the question as to the meaning of the expression "pharmaceutical economics", and again, it may express genuine doubt as to whether there is such a thing as "pharmaceutical economics". It is in this latter sense that it has been placed in the title.

Economics is the social science which deals with man's effort to make a living. This definition does not seek to ex-

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plain how pharmacists, in contrast with engineers, or even lawyers, seek to make a living. It endeavors to explain the complex price relationships existing in our present day economic world of minute division of labor and exchange. Moreover, economic interpretations of price phenomena stress the point of view of the social group rather than that of the individual or individuals, for price determination involves group relationships. Hence, the professional economist denies the existence of such pseudo-economic hybrids as "pharmaceutical economics", "medical economics", "engineering economics", "hydraulic economics", "biochemical economics", etc. All these misleading expressions do violence to the fundamental nature of economics as a social science. They seem to confuse the art of applying thrift or economy in specific fields of endeavor with the descriptive or analytical science of economics. Suggestions as to how to increase the usefulness of articles through effective advertising and display, aids to promote efficiency in merchandising of goods, and the like, are indicative of efforts to practice economy or thrift in a vocation or a profession, but they do not necessarily imply an understanding of economics. When economics is referred to as a useful art, it indicates an attempt to suggest how economic principles may be applied to the solution of practical economic problems. Thus, the principle of variable proportions may be employed to determine the most economical combination of productive resources in an industrial plant.

It is a well recognized fact that people can practice an art or a skill without any knowledge of the scientific facts and underlying principles. Millions of people can drive an automobile, an act which depends upon the performance of certain semi-mechanical operations. How many understand the scientific principles which govern the functioning of the complex mechanism which they control? Most of us can push a button or throw a switch, but how many know anything of the science of electricity? To be able to practice economy or thrift is, on the part of an individual, no doubt a useful art, but it does not offer an explanation of the guiding principles governing the complex relationships of individuals in the economic world of today. What, then, are these principles of economics? How may they be effectively taught to students in a professional school, such as a college of pharmacy? The answers to these questions will form the main body of the subsequent discussion.

It must be stressed once again at the outset that the study of economics should be viewed from the social, and not from the individual point of view. It may, of course, be argued that society is nothing more than the composite or aggregate of individuals, and hence there really is no difference between these two viewpoints. If this were so, it might indeed be maintained that the study of the pharmacist's effort to make a living is "pharmaceutical economics" and the study of a shipper's effort to make a living constituted "shipping economics". A moment's reflection should reveal the essential difference between the individual and the social point of view. The adulteration of food products was clearly a means of making a living on the part of the individuals resorting to these practices. Because of the evil social consequences of such adulteration the Pure Food and Drugs Act became law. To curb unsocial practices of monopolists, who seek to promote their individual well being at the expense of their fellow men, the various anti-trust laws came into existence. Behind a great deal of the present day so-called social legislation lies a clear perception of the conflict between the individual and the social point of view.

Another basic distinction must be made before considering specifically the contents of a course in economics for the curriculum of a professional school. Such a curriculum, in general, may be divided between utilitarian or vocational subjects and cultural subjects. Utilitarian subjects stress the practical usefulness of course content in the conduct of a chosen profession. What, for example, is erroneously referred to as "pharmaceutical economics" relates to such vocational subject matter as improved methods of wholesale and retail marketing of pharmaceutical products, analysis of selling possibilities, agencies used in marketing various products, efforts at price maintenance, problems of packaging merchandise, operating policies of chain stores, etc. In a basic course in economics, this analytical and descriptive material may at best be employed to illustrate the operation of various economic principles, such as the principle of diminishing utility, the principle of comparative costs, and the principle of proportionality.

Economic principles have far broader implication and application than their pre-emption by either pharmacists or engineers. They are intended to explain economic institutions, arrangements, and processes which have been devised by man

to satisfy his ever growing material and non-material wants with the aid of the scarce natural resources at his disposal. From this point of view, economics as a cultural subject aims at enlightenment and discipline which may be acquired by both mental and moral training. It seeks to give the students an understanding of our price economy, wherein a number of basic institutions, such as private property, freedom of enterprise, individual initiative, and freedom of contract play an important role in shaping their lives and in guiding their destinies.

This cultural aspect of the science of economics must not be overlooked in the course offered by the professional school, otherwise the course in economics may easily become one in "pharmaceutical economics". Any such applied course fails to furnish as broad a basis for understanding the functioning of our complex economic mechanism as is given in a course in general economics.

In the light of the foregoing observations, there would seem to be a real need in any professional school or college for a fundamental course in economics. Such a course has been conducted by the writer for a number of years in the Philadelphia College of Pharmacy and Science. Initially, it was a required course, three hours per week, offered during the freshman year. Because of the immaturity of freshman students and their inability to follow more or less abstract theoretical analyses, it was deemed advisable to move the course into the sophomore year. The results of this change have been very gratifying, as has been evidenced by the progress made by the students in the course. The subject matter in this fundamental course begins with a descriptive analysis of the characteristics of our capitalistic economy. This includes a study of the institution of private property, private enterprise, motivation in economic activity, and the pricing process. Moreover, it seeks to give the student a critical evaluation of alternative systems of economic organization. More specifically, the course includes an analysis of the principles basic to an understanding of: a) why goods are produced, b) how goods are produced, c) how goods are exchanged or traded, d) the mechanism of exchange, and e) the sharing of the goods among the members of society. These broad topical divisions follow the general treatment of the subject matter in any standard text in economic fundamentals.

To a certain extent, illustrative materials in the course

in economics are chosen from the students' field of vocational interest. Students in a professional school are given a broader basis of understanding of economic realities if they can be made to realize the widest possible application of various economic principles. Thus, the principles and processes of exchange might be illustrated by using the operation of a corner drug store as an example. These principles, however, attain far broader significance in the minds of students when related to items of world-wide trade. The larger the scope of illustrative materials the broader will be the cultural foundation laid by the course. It is this point of view which has been stressed as much as possible by the writer in presenting the subject matter of economics to the students at the Philadelphia College of Pharmacy and Science.

A proper appreciation of the cultural value of economics is of fundamental significance in our present age of minute specialization. The dangers of developing an exaggerated sense of importance of one's own vocation may be guarded against by effectively balancing one's intellectual diet, as is done in our professional schools and colleges. Cultural courses of various kinds may be viewed as either entrees or as desserts by those who are inclined to focus their attention on the main dishes. Without them neither harmony nor balance of diet would be achieved. An understanding and rational application of the principles of harmony and balance are basic, not only to our physical diet, but more fundamentally to the whole subject of consuming both material and non-material goods. This is the ultimate objective of man's many sided economic activities.

What Economics Offers to the Pharmacy Curriculum*

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Pharmacy school programs are being subjected to very careful scrutiny these days. It is imperative that they be kept abreast of the newer developments in the pharmaceutical

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world. Among the newer developments has been the increasing emphasis on the commercial aspects of pharmacy. Naturally, this brings to the front the necessity of injecting courses dealing with business affairs into the pharmacy curriculum. We are met here to consider problems of general policy and problems of course selection.

More than ten years of teaching economics and allied subjects to pharmacy students has given me an understanding of curricular objectives in the schools of pharmacy. Experience as a drug store proprietor has made me acutely aware of the business end of pharmacy. All this has enabled me to formulate ideas relative to the correlation of training in the methods of professional pharmacy and in practical retail store management.

The plan of combining pharmacy and business studies in operation in our institution has offered a large measure of satisfaction. Other schools may have different programs which are just as successful. I do believe, however, that there should be uniformity of practice among all the schools of pharmacy when integrating the courses. This desirable uniformity can only be achieved after careful discussion and evaluation of what is being done and with what degree of success.

We are well aware that the modern pharmacist has to be a versatile individual. He fills a most unique position in society. He is at once a professional compounder and dispenser in the field of medicine, a guardian and counsellor in the field of community health, and a merchandiser in the field of economic endeavor. Such a set of circumstances places a tremendous and peculiar burden on the institution responsible for training the young pharmacists.

Years ago it was quite adequate to familiarize the student with a basic subject and with a few operative practices. Thus, in a two year period, the pharmacy school afforded good training in prescription compounding and in operative pharmacy, with suitable emphasis on materia medica, pharmacognosy, and general chemistry. Later it became necessary to expand the program to cover such subjects as bacteriology, specialized chemistry, first aid, and the like. Naturally, the period of schooling had to be lengthened. More recently has come the recognition of the importance of adding courses dealing with commercial affairs. The commercial side of pharmacy is

apparent to all. The druggist, like any business man, is in business for profit. In the business world, he is primarily a merchant and secondarily a professional dispenser. As a merchant, the druggist buys for less and sells for more. The margin between his costs of doing business and his receipts measures his monthly gains. The final test of success is the manner in which he runs his store; buying the right goods, operating efficiently, collecting bills, etc.

We all know that the modern druggist is confronted with a more difficult business task than that of his forbearers. He competes in a more highly specialized and complicated business world, where efficiency in business methods and operation marks the difference between success and failure. The professional side of pharmacy, sorry to say, has been buried back in the prescription room. The so-called professional drug stores are in the vast minority. The average drug store is a clearing house for packaged drugs, sundries, sodas, tobacco, and hardware. What I am trying to emphasize is the simple fact that the druggist is today primarily a business man. And what is more, he is engaged in a most hazardous enterprise, hazardous from the financial standpoint. It takes a resourceful merchant to make good in the retail drug business. Practically every problem and technique of business activity can be duplicated in the drug store operations. The ramifications of business can be easily observed in such activities of the druggist as buying all kinds of materials, supplies and equipment; compounding prescriptions; sorting and packaging ingredients; storing and warehousing merchandise; advertising and selling thousands of articles; keeping a multitude of records; directing personnel; extending credit and handling collection correspondence; not to speak of all the activity centering around banking, insurance and taxation. Verily, the smallest drug store unit is a miniature business world in itself.

I mention all this to establish the fact that the pharmacy students of today must be taught something more than the technique of pharmacy and science. They must be reasonably familiar with fundamental business procedures. They must understand the technique of operating a retail unit, and they must appreciate the relationship of merchandising to all other business activity. All this to give them a better appreciation of their own and other peoples' business. Just how much business training they can and should be subjected to is the

problem that faces educators in the field of pharmacy. The number one difficulty which I see at the moment in adding business subjects to the pharmacy school curriculum is that already the schedule is overloaded. What with all the traditional subjects of pharmacy, the general and specialized courses in chemistry and biology, and the liberal arts, the student majoring in pharmacy carries a greater load than the average student from other departments.

The term, economics, conveys a multitude of meanings. In a general sense, it covers all courses that deal with business activity. Thus, economics could be taken to cover such a wide and diversified group of subjects as accounting, advertising, salesmanship, marketing, merchandising, statistics, finance, money and banking, business law, etc., as well as the principles of economics itself. Generally, all these could be called economics. A better plan, I believe, is to use the restricted meaning of the term. In this sense, economics refers to the course, principles and problems of economics. The other business subjects may be grouped under such names as finance, business administration, and commerce. It is the restricted interpretation of economics that I use.

We have consistently offered economic principles and problems to our pharmacy sophomores on a 96 didactic hour basis. A special section of this course is set aside each year by the Department of Economics for this purpose. Although the pharmacy students must go out of their own department to follow this course, no difficulties of jurisdiction have ever arisen. The absence of any jurisdictional trouble is in large part due to the fine cooperation existing between the two departments and to the splendid attitude of the students. We have found our young pharmacists most enthusiastic about their economics. Because of that, they adapt themselves practically as well as the commerce majors.

As the first business course for the students of pharmacy, economics is most ideal. It is a broad general study of the business world. It touches upon most phases of commercial activity as embodied in production, consumption, pricing, business organization, credit and banking, and the like. No attempt is made to present an exhaustive treatise on any one specialized branch of business. Rather, the effort is to describe our whole economic structure and to show how all the constituent parts fit into the economic machine. For example, banking is discussed not as a business in itself but as a credit

function related to all business activity. Wherever possible we direct the study to the particular field of drug retailing. Term papers and readings are also planned.

I go into all this detail to stress the fact that economics should be the primary course. If he gets nothing else in the line of commerce study, the pharmacy student should at least secure a clear-cut idea of how business functions and how retail merchandising plays its part in the scheme of production. For these purposes, the economics course serves well. It is general enough to present a complete description of economic affairs. It seems better for this course to be taught by a commerce faculty member, under the jurisdiction of the pharmacy school. Seldom is any pharmacy faculty member qualified or disposed to teach the principles and problems of economics.

For those pharmacy schools which can include other commercial courses in their curricula, a number of these courses are suggested in the order of their importance. In the junior year, it is well to arrange for a course in elementary accounting. Such could be presented by a teacher of either commerce or pharmacy. A short course with emphasis on retail store accounting and running, for 32 didactic hours, with an additional 32 hours for laboratory drill, would be quite satisfactory. There is much practical value in such a course. It gives a fundamental grasp of accounting principles and bookkeeping procedures. This practical knowledge is certainly indispensable for efficient retail store operation and management. It is in this phase of business operations that many small druggists falter. The giant chain store organizations can afford to hire office clerks, accountants, and auditors and to install a high class system of record control. On the other hand, the small operator has to be a one-man business organization. He is the prescription filler, salesman, record keeper, etc., all rolled into one.

Quite likely, an analysis of drug store failures would show a large percentage of bankruptcies resulting from inadequate and inefficient record control. How in the world an enterpriser can operate without adequate records and comparative figures is beyond me. Still there are many druggists who attempt to do so. They are satisfied to continue shooting in the dark. They are indifferent to the leaks, and make no effort to eliminate them. It is astounding to find that intelligent men like pharmacists are too often inefficient business men. Whose fault is it? I believe that the fault lies partly

with the schools which have failed to provide an opportunity for commercial study. In this day and age, I believe it is incumbent upon these institutions to create an opportunity for the pharmacy student to learn something about the procedure of keeping records, such as those dealing with sales, returns and allowances, expenses, taxes, etc. This can be accomplished in the abbreviated accounting course.

Next in importance in the specialized branches of economics is the course in retail store management. This is a most practical study. Here are presented all the sound principles of operating and managing a store. Emphasis is placed on such features as buying, selling, inventory, pricing, correspondence, etc. The first semester of the senior year should make provision for this course. Forty-eight didactic hours should be sufficient. Usually, some member of the pharmacy faculty is qualified to handle this course and to give it the proper drug store emphasis. A commerce faculty member would be too prone to emphasize the problems of the department stores and other large retail units.

It may so happen that some pharmacy schools can afford to use the second semester of the senior year for another business subject. In this event, it will be profitable to select certain aspects of retailing for further treatment. I suggest salesmanship for such emphasis. After all, if the druggist expects to survive economically, he must sell things for a profit. What better knowledge is there than to know how to sell? Every day, even in the corner drug store of the small town, there is abundant opportunity to put practical ideas of salesmanship and advertising to work. It is surprising how much an alert student can get out of a course in salesmanship. Here again, I believe the course should be handled by a pharmacy teacher. The development of the course should be strictly in keeping with the peculiar problems of selling as found in drug store merchandising.

The program of business study as I have presented it provides for the following: economic principles and problems for 96 didactic hours in the sophomore year, taught by a member of the commerce faculty; elementary accounting for 32 hours of lecture and 32 hours of laboratory drill in the junior year, taught by a qualified man from either the commerce or the pharmacy faculty; in the senior year, one semester each of 48 didactic hours of retail store management and salesmanship, taught by the pharmacy faculty.

This program does not exhaust the possibilities of business studies. There are other courses like business correspondence and banking which have sometimes been injected into the pharmacy curriculum. Possibly, some of you may feel that I have exaggerated the importance of commercial studies. Perhaps you feel that their inclusion in the pharmacy program would call for the surrender of too many traditional aspects of professional pharmacy. I feel that the druggist first of all must make a living. If he can make it surrounded by all the glories of professional dignity which rightly belong to him, all well and good, but make a living he must. I believe that the schools of pharmacy must provide him with the business tools as well as the pharmaceutical knowledge.

Six Years in a Practice Pharmacy¹

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A few years ago the administrators of the Albany College of Pharmacy began to realize that students graduating from pharmacy colleges were better prepared for the practice of professional pharmacy than they were for commercial pharmacy. In an attempt to change this, a complete retail pharmacy was installed in the pharmacy building. Because of various problems involved, it was impossible to establish a regular retail store. It was the intention of the college, however, to carry out a store program with the exception of actually making sales.

At first we called it a model pharmacy but soon realized that what a model store should be was a matter of opinion. Then we decided to call it a practice pharmacy because that is what it is.

The amount of store experience the students have had ranges from none to ten years and in various types of stores. These students are divided into store classes so that each group represents, as nearly as possible, a cross section of the whole. Freshmen learn how to clean a floor without covering the displays with dust or wrecking the fixtures; they practice on package wrapping until they are proficient; they learn meth-

¹Read before the Conference of Teachers of Pharmaceutical Economics at the 1939 meeting at Atlanta.

ods of removing finger prints from glass cases; they learn how to display merchandise effectively in the store and in the window, and how to build a professional window display which will really attract the attention of the public.

Demonstrations are conducted to illustrate various types of customers and the methods of dealing with them. A mimeographed bulletin is published at intervals so that the entire student body may benefit from the store activities of the various classes. Since it is a part of the general plan to conduct each class to fit the students in that particular group, no two periods are exactly alike, even though all classes are heading toward the ultimate goal of a well rounded experience. This aim of individualized instruction is not without its difficulties. Careful planning can overcome them.

In a course in arithmetic, two times two equals four. In double entry bookkeeping, debits always are entered on the left side of a journal or ledger. These are fixed items of information, and there is no room for argument. When we deal with methods of store operation, we meet a different problem. We can say, "Window displays should be changed twice a month". Who is our authority? "Red should always be used as a color for Christmas decorations." Should it? Who says so? These are matters of opinion. It is ridiculous to expect students to accept statements like these without justification. You could require them to memorize certain reasons for examination purposes, but that is not good education. You must lead them, through a process of reasoning, to interpret the possibilities of the situation. You must give them ideas to use in their thinking process, and then show them how to develop ideas of their own and how to weave them together into an answer which meets their particular problems.

How does this psychology work? Take, for example, a simple little thing like wrapping a package. As a result of experimentation with various approaches, it seems to me that the best approach to package wrapping, with the inexperienced student, is to give him helpful suggestions accompanied by demonstrations before he begins. Many experienced students, however, are sure that they know just how to do it. They resent anyone's suggesting that they need further practice. My experience has been that the best way to deal with a student from this group is to give him a number of unusually difficult articles and say, "Show us how you would wrap these". If he can do it quickly and easily, no issue is raised. If he

has difficulty, or does not do a thorough job of it, no special criticism is necessary. In fact, it does more harm than good. It is much better for the instructor, after the student has finished, to show the package to the group, saying, "There is also another way of approaching this problem", and then demonstrate a different arrangement of individual articles, resulting in a better looking and more secure package. This new package is presented to the group, as demonstrating a different method. No one's ego has been hurt and no embarrassment caused. Just a little psychology will show the "know it all" that he really does have a chance to improve his technique. This opening gives me the opportunity to say to the class something like this: "You should know how to wrap packages in a neat and careful way. If your employer wants you to do a sloppy job of it, if he wants you to twist the paper around the neck of a bottle, remember that he is paying you. Do it his way. If you can do it correctly, you still can do a sloppy job when the occasion demands it. When you have your choice, however, wrap as quickly as is consistent with firmness and neatness. Make the customer feel that he is getting his money's worth".

In our attempts to give the students the best opportunities for experience, we have conducted various experiments. One of these has had to do with the length of the periods which varied from one to three hours. We have compared the value of daily periods with weekly periods. It seems to us that one hour a week for one semester gives the best results. We have tried various sized classes, from three to fifteen, and have come to the conclusion that a class of seven or eight is just about the right size. This gives a large enough group so that there is a chance for discussion and an opportunity to benefit from the experiences of others, and yet it is small enough so that the instructor can give a larger amount of personal attention than would be possible with more students in the class. It makes the group large enough so that it can be balanced with both experienced and non-experienced students, and yet small enough so that there is plenty of work to do. We tried store classes in which the students represented all of the four academic years. We combined freshmen and seniors, juniors and sophomores. We obtained better results by having freshmen in one class, sophomores in another, but there are advantages in the mixed classes. For example, in a retail pharmacy, the newest and most inexperienced employee is fre-

quently the one who is the apprentice and who keeps the store clean. The pharmacist's time is often too valuable for this type of activity. In like manner, freshmen and seniors might be compared. We try to minimize the routine work in senior classes and emphasize it for the freshmen. In a mixed class, these activities can be coordinated quite satisfactorily. On the other hand, a greater number of operations being carried out at one time causes enough confusion so that the advantages of the mixed group are more than off-set by the disadvantages.

These are only a few of the experiments we have tried. We feel that our program has sufficient merit to warrant its continuation.

Developing Prescription Business in a Pharmacy*

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Much has been written on the subject of this paper. In an attempt to add something new the writer has drawn on observations made while calling on successful pharmacists.

Obviously, prescription department layout is an important factor in developing prescription business. There is a trend toward better, semi-open prescription departments which can be designed to suit the needs of individual pharmacists. Commercially minded teachers in colleges of pharmacy can help future pharmacists to understand the value of a modern, attractive, well equipped space in which to carry on their professional activities. Aside from adding professional prestige to a pharmacy, the prescription department contributes to store earnings and adds to the sales in other departments of the pharmacy.

The need for a program and persistence in following it is essential. Students could well discuss a program and some of the problems in carrying it out. The necessity of diagnosing conditions should be pointed out, and this would logically be followed by suggested methods of studying and applying ways of increasing the number of prescriptions compounded in the store. Confidence is synonymous with success in developing

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the prescription department of any pharmacy or in operating a professional pharmacy. Confidence can be attained by intelligent, courteous service; by selling only merchandise of known quality; by knowledge of, and confidence, in the products sold. Intelligent service includes quick service. A card file, by customer's name, will avoid the awkward delay caused when Mrs. Jones wishes to have refilled the prescription which she brought to the pharmacy about three months ago. She doesn't remember the number on the prescription, but if you look on Mrs. Jones' file card, you can quickly find that number, and the refilling of the prescription can be accomplished with dispatch.

Pharmacists generally should take more precautions in refilling prescriptions. This message on a prescription blank would appeal to many physicians and settle as well the question of who owns it: "The Following Restriction Is Not To Be Observed Unless Signed—This prescription is written for the patient whose name appears thereon, and is intended only for present indications. It must not be renewed therefore, and a copy should not be given without my consent. The apothecary compounding this will please assume custody thereof."

A friend recently told me of an incident which occurred in his store. It illustrates how an extra touch of care in compounding prescriptions is important. This man's clerk was compounding a prescription. He was a good pharmacist, but on this occasion the employer noticed he was devoting unusual care to the prescription. The proprietor later found that the prescription was for the pharmacist's own child. Better pharmacists would result, and the public would have more confidence in pharmacists if students could graduate impressed with the need for young pharmacists who are endowed with the spirit of service and a willingness to give the prescription that extra touch.

A woman brought her small child into a pharmacy, seeking medication for the child's decayed teeth. The pharmacist gave her some good advice instead of selling medication. She came back from her dentist, well pleased with the health service her pharmacist had rendered in advising her to take the child to the dentist. The dentist too was pleased. The pharmacist compounded two prescriptions from the dentist on this occasion and many more afterward. In many instances pharmacists could give a more intelligent health service to the advantage of all persons concerned.

I know of a pharmacist who hired a clerk to take his place in the prescription department so that he, the proprietor, could receive prescriptions and give a more intelligent, helpful service than his employees had been doing. He stopped a decrease in his prescription business and showed an increase in a short time. One pharmacist came to a convention with another, both from small towns which were a short distance from a city where adequate pharmaceutical service was being given. The one complained to the other that the prescription business was bad in his town. That very day several prescriptions had come to the second pharmacist from the complaining pharmacist's town a few miles away. Why? Because the successful pharmacist had in nine months caused people to have confidence in him and in his store. He had, in this short time, brought to twenty-seven per day the average number of prescriptions compounded.

If I were asked for my impression of the greatest handicap in the development of prescription business, I would say that it is lack of knowledge of both official and non-official products. The recent graduate is better posted on the official products, but soon finds himself wanting there too. Newton D. Baker made a statement which applies to too many graduates of all types of colleges. He said, "The man who graduates today and stops learning tomorrow is uneducated the day after". Someone in some college of pharmacy is going to find a means of developing better reading habits in students, and when he does, he will make a great contribution to the profession.

To keep up with what is new, it is necessary to read medical and pharmaceutical journals as well as the house publications and literature from chemical and pharmaceutical manufacturers. Physicians and dentists will, in time, become interested in a pharmacist and his pharmacy if he can give them quick, dependable information on the new drugs about which they inquire. Some pharmacists have found that it pays to send bulletins or letters containing information of this kind to physicians and dentists. One very great advantage of this program is that the pharmacist finds himself developing an interest on his own part, and then gaining customers as a result of being up-to-date and capable of rendering specific service.

The prescription business can be developed by professional advertising, window displays, and interior displays. All of these mediums may be used to advantage to let the public and

the public health professions know that the pharmacy is operated by a professionally minded man. Future pharmacists should be taught to use to better advantage the professional material in their pharmacies, as well as that which is supplied for them by ethical manufacturers.

Pharmacists have the right to exercise their knowledge in influencing physicians and dentists to prescribe various kinds of preparations which they believe to be of advantage to the patient. A sure way to develop prescription business is by contacting physicians and dentists regularly through personal calls and letters. Pharmacists are prepared to help these men by making suggestions which will be of value to their patients. Pharmacists can get help in preparing these letters from manufacturers and from other sources. Either or both methods of contact can be used to advantage, but results will be secured only in proportion to the regularity of the contacts and the value of the service rendered.

My organization has offered a number of methods which have been used successfully in developing prescription business. There are, no doubt, many more. Successful prescription departments are the result of combining and applying a number of plans developed in a long time program. It has been my observation that personality—partly a gift and partly an achievement—plays a very important role in any success story. Perhaps teachers could influence students to make better use of "this most profound, most mysterious, and most potential factor in the universe".

Recent new subscribers to the Journal.

Miss Marjorie Moburg, Iowa City, Iowa; Professor Clarence M. Brown, Columbus, Ohio; Mr. M. F. Coontz, Waterloo, Iowa; University of Toledo, Toledo, Ohio; J. D. Chang and Company, Shanghai, China; Dr. Lloyd W. Hazelton, Georgetown University Medical School; Mr. R. L. Bloomfield, Los Angeles, California; Dean Luis Torres Diaz, Puerto Rico; Mr. J. A. Hynes, Chicago, Illinois; Mr. Adolph D. Fennel, Cincinnati, Ohio; Dr. Malcolm S. Trupp, St. Louis, Missouri; Dr. Joseph S. Goldwag, Brooklyn, New York; Dr. Benjamin L. Milana, Brooklyn, New York; Dr. August E. Wilkoc, Brooklyn, New York; Dr. Berl S. Alstodt, Brooklyn, New York; Mr. W. J. Bedwith, Buffalo, New York.

EDITORIALS

Pharmaceutical Dignity

During the Christmas holidays we had the privilege of attending the annual meeting of the American Association for the Advancement of Science in Columbus, Ohio. Altogether, those who attend these meetings are just about the most select group that we contact at any of the many conventions that we attend. It is highly gratifying that pharmacy has a vigorous section in this body, and the program this year, arranged by Dr. Glenn L. Jenkins of the University of Minnesota, was of a high order.

Every paper presented had some definite bearing on the practice of pharmacy, as you practice it day in and day out in your store, as you serve the community in which you work. Perhaps one of the most damaging influences in American Pharmacy today is the failure on the part of a great many pharmacists to realize that somewhere back of the professional part of their work are the combined efforts of a great many admirably trained scientists. Their work is wholly responsible for your being able to stay in the drug business at all, regardless of how much or how little real drug work you do.

Few know better than we do that the average drug store is a composite of more different activities than is any other place of business in the community. Further, we know that the proprietor and his pharmacists must be so professionally conscious that the community be impressed constantly with the fact that regardless of the endless list of petty things that pharmacists must do daily in order to make a living, the heart of it all is drugs, medicines, and sick room supplies—in a word, the welfare of the health of the community.

The jibes that are constantly aimed at the drug store are not due altogether to the many things that are sold in them, but largely also to the fact that pharmacists all too frequently conduct themselves and their stores on a level that justifies the public in thinking of the whole business as more or less a joke.

Do physicians, or dentists, or lawyers who buy and sell

land, or stocks and bonds, or any other commodity lose the respect of the public on this account? The answer to this inquiry depends almost wholly upon whether or not members of these professions let such transactions make them any the less valuable as professional men. If time given to such non-professional activities is taken from the time that they should give to such study, and reading, and non-professional contacts as are needed to keep them abreast with what their professions call for and their clientele needs at their hands, we know full well what the verdict of the public will and should be.

You and I both know many good and able men in pharmacy who have done just this sort of thing. No time for the literature of pharmacy, no time for professional meetings, no time for learning enough about what is new in their profession to discuss intelligently their mutual interests with physicians, and dentists, and other public health workers; no time for those things without which there would be no drug stores at all. Pharmaceutical dignity based upon sound knowledge and a proper sense of public health obligations and responsibility for professional contacts—these are some of the things that must get a hold upon pharmacists if pharmacy is to enjoy that degree of dignity that this age old service to mankind has a right to expect for itself.

Wortley F. Rudd in *The Virginia Pharmacist*.

Pharmaceutical Education is a Public Service

The State regulates the practice of the various professions under its police power. This is exercised for the protection of the public health and welfare. No one may practice pharmacy in New Jersey without obtaining a license to do so and no one may operate a pharmacy without a permit to do so. Both, the certificate of registration of pharmacists and the permit to operate a pharmacy, are obtainable only after meeting certain professional qualifications.

These qualifications, in the case of the certificate of registration, include graduation from a four year course in pharmacy approved by the Board of Pharmacy. This educational requirement has been established to assure proper selection and preparation of the men and women who are to be en-

trusted with the compounding of prescriptions and the sale of drugs, medicines and poisons. It is therefore a requirement established in the public interest. In fact, it was established by the representatives of the people of New Jersey in the State Legislature.

Unlike general education, pharmaceutical education serves a specific purpose. It also serves a public purpose, because every practitioner of the Art of Pharmacy becomes a public servant, in the sense that he is charged with certain responsibilities necessary for the protection of the public health and welfare, which only he is permitted to assume.

Having assigned these responsibilities and fixed the qualifications of those to whom they are assigned, the state has only partly discharged its duty to the citizenry. There remains the duty of assuring to the people that the responsibilities assigned are properly assumed and that the qualifications demanded are properly enforced. It is the function of the state board of pharmacy to enforce the law and the standards set. It is the duty of a college of pharmacy, approved by the board, to supply an educational program which will result in well-trained pharmacists capable of qualifying for the responsibilities of pharmaceutical practice.

It is becoming more and more difficult for prospective pharmacists to assume the full cost of their professional education. When young men and women are willing to pay \$1,600.00 in tuition fees alone in order to obtain the education required by the state for the practice of pharmacy, it does not seem unreasonable to ask the state to make a contribution to the program of pharmaceutical education, even as it has supported education in ceramics, agriculture, journalism, engineering and other arts, sciences and professions. Without aid from the state, the cost of education to the individual must rise and this will mean a reduction in the number of persons entering the profession. Best estimates of the public need for pharmacists indicate that the number now entering the profession should not be reduced. Hence we are dealing with a problem that should be brought most forcefully to the attention of the appropriation committee of the legislature.

It is inconceivable that the State of New Jersey will shirk its responsibility to provide for a public service which it has instigated for the protection of its citizens. It is particularly inconceivable that the state will shirk such responsibility

when the future practitioners of pharmacy are willing to contribute nearly all of the expense of the professional education demanded of them by law. A small contribution by the state to pharmaceutical education will benefit practicing pharmacists, as well as students of pharmacy. The library and extension education facilities of the New Jersey College of Pharmacy of Rutgers University are making an important contribution to the advancement and improvement of the profession. The public is the ultimate benefactor of all this. Pharmaceutical education is, therefore, a public service as well as a specific service to pharmacists. As a public service it should receive public support if and when needed and it is needed right now.—Robert P. Fischelis in the *New Jersey Journal of Pharmacy*.

The Teacher and the Retail Druggist---the Soul and Backbone of American Pharmacy

Through the courtesy of Dr. E. F. Kelly, the American Association of Colleges of Pharmacy has been offered the privilege of using a page each month in the Practical Pharmacy Edition of the Journal of the American Pharmaceutical Association for the purpose of placing before the retail druggists of America any items concerning pharmaceutical education that might be of interest to them. As a matter of fact every problem in, and every phase of pharmaceutical education is of vital interest to both the retail druggist and the pharmaceutical educator.

There has been much criticism of the educational program in pharmacy. In this connection it should be remembered that today all education is in a turmoil. Likewise, the whole world and everything in it is topsy-turvy. In a recent article in the *Satevpost*, Dr. Robert Maynard Hutchins, President of the University of Chicago, says this of education in general: "We do not yet know how to organize a university or how to manage it; we do not know whom to teach, what to teach, or how to teach; we do not know the relation of education and research; we do not know what kind of education will strengthen the foundations of democracy. We are not clear about our aims, and fumbling in our methods. But education is our only hope." There is no group of men that realize the

inadequacy of their educational program more keenly than that group engaged in pharmaceutical education. Nevertheless, a survey of the requirements for the study of pharmacy and of the progress in the coordination and in the improvement of the pharmaceutical curriculum since the turn of the century, reveals an advancement which is almost unparalleled in any other field of education. We are not yet satisfied with our accomplishments and today we are revamping the entire pharmaceutical educational program. A new Syllabus revision is being made on a scientific basis. Pharmaceutical education is being standardized by the American Council on Pharmaceutical Education. As a matter of fact, the interests of the colleges of pharmacy and of the retail practitioners are inseparable. The history of the professions points definitely to the fact that those lines of endeavor which have developed the most outstanding and the most forward looking educational programs are the ones that are now most highly regarded by the public. This is especially true when that program has been supported by the rank and file of the profession. Opportunities do not just happen by accident in any professional field or in any business, they are created and to do this, we must have in the educational field men of vision, who will do creative planning, and in the profession, practitioners who will support those plans.

What pharmacy most needs today is not only the moral, but the financial and militant support of its educational program and its educational and research institutions on the part of retail druggists.

In the coming months there will be presented in the Practical Pharmacy Edition information which will acquaint the retail druggist with the present status and objectives of the pharmaceutical educational program and of the benefits of this program to the profession, to the public, and to him personally.

Rufus A. Lyman.

The English We Use

Too often we do not give enough thought to the English we use in our letters, in our everyday speech, and in our more formal talks before one group or another. We often feel satis-

fied with saying a thing, regardless of how it may sound or of whether it gives our exact meaning. In some way we have an idea that care and exactness are associated with the pedagogue, whose interest, we suppose, is purely academic.

But consider for a moment. The value of clear and concise expression is self evident. The one who can understand clearly what is said and meant and can say clearly and concisely what he means has a very powerful implement with which to work.

This person, first of all, is sure to have more confidence in himself than the one who is hesitant, awkward, and faulty in his understanding and speech. The knowledge that his English is correct and exact and the realization that he can interpret correctly the speech of others give him a sureness in his contacts that places him above the others.

Then, too, we should not underestimate the effect of good English upon our hearers. The one who uses correct English, which is devoid of slang, trite sayings, and colloquialisms, instills respect and confidence into those who hear him. One of the most common measures of a man's education is the language that he uses. This is true of everyone. Our respect is shattered when we detect ungrammatical and careless English.

If all that has been said is true for people in general, how much more it applies to the pharmacist! The pharmacist, as the doctor and the educator, has the dignity of his profession to build up and maintain. If he is to keep pharmacy on the plane of a profession, he must give more thought to the English he uses in his conversations.

Although it is true that English does not make the man, nevertheless, it does often tell what he is. The man who uses poor or careless language is considered to be poor and careless in his work as well. Would any pharmacist desire to be so regarded?

Surely the pharmacist wants to be considered, above all, a careful, exact, and painstaking individual, in whom people will have the utmost confidence. Confidence will come to him if he is careful of his English.

Edwin M. Durand,
Rutgers University College of Pharmacy.

How Training in Pharmacology Helps the Retail Druggist in the Intelligent Practice of His Profession

Have you ever tried to teach anyone to drive a car? If you have, you know that there are two methods. You may tell your pupil that when certain levers and pedals are moved, certain things happen. On the other hand, you may teach your pupil to drive a car by explaining what happens under the hood when he performs his various operations from the driver's seat. You would explain, very simply perhaps, the mechanism of the clutch, the transmission, the carburetor and other operating parts of the modern car. In other words, you would want the pupil to understand the mechanism of the car's operation. If it is true that men are better drivers than women, the explanation might lie in the fact that men are more mechanically minded and having an understanding of the mechanics of the car, they perform better than women, who learn to drive by memorizing certain movements.

Up until the last 15 or 20 years, pharmaceutical education has been following the first method. Students were taught how to perform certain technical tasks more or less by rote. However, in the last 20 years it has slowly become more and more obvious that the ultimate rationalization of most pharmaceutical processes is to be found in a pharmacological explanation. This realization has resulted in the introduction of pharmacology into the pharmaceutical curriculum.

A pharmaceutical chemist can analyze a drug with great care and accuracy, but his results are meaningless until the pharmacologist has established a relationship between the amount of a drug and the effect it will produce. In other words, the medical sciences use the absolute values that are found in a chemical assay simply as an index of the potency of a drug. The Pharmacopœia and National Formulary give definite standards for the purity of the drugs and preparations which they contain and set up certain tolerances. Since these standards are often checked by chemical tests it is easy for the result of the chemical assay to become an end in itself. But one must not forget that the factors which govern these tolerances are pharmacological factors and that these tolerances are set up only after the question of the pharmacological potency of the drug has been considered.

Even the processes of practical pharmacy carried out in the retail store have a background of pharmacology since there is the expectation that the drugs will be used for therapeutic purposes. Why are isotonic solutions used? Which menstruum is best for making an extract of a crude drug? Why an enteric coating? Why is it preferable to dispense some drugs in tablets rather than in solution? Why should morphine and other narcotics be kept locked up? The answers to all these questions lie in some pharmacological property of the drug.

It is true that a prescription could be filled just as accurately and just as effectively without this knowledge, just as it is possible for an individual to drive an automobile without any knowledge of the function of the carburetor or the transmission. But in such a case something is missing. Certainly in a field such as pharmacy, this understanding of the mechanisms is what makes it a profession instead of a trade.

The objective of pharmacology in the pharmacy course, therefore, is to furnish the pharmacist with an understanding of "what goes on under the hood". Older courses in pharmacology were content to simply attach tags to certain drugs. But the modern course emphasizes the mechanisms of drug action and attempts to teach students not only what drugs do but how they do it.

Taught in this way pharmacology is invaluable to the pharmacist in more than one way. It will, of course, enable him to understand the problems of the physician and to work with him as a colleague rather than a servant. It will enable him to intelligently answer customers' questions and will teach him to avoid the practice of therapeutics by counter prescribing. More than these, however, it will give him a new respect for the drugs he handles and enable him to think more intelligently about the problems of his profession.

James Madison Dille, University of Washington.

The American Council on Pharmaceutical Education has done a good job accrediting colleges of pharmacy. Pharmaceutical education is now a known quantity and quality the same as medical and dental education. No longer can the younger generation be led to spend their money in institutions which are not qualified to give adequate pharmaceutical instruction.

George A. Moulton, Secretary New Hampshire Board of Pharmacy.

THE EDITOR'S PAGE

In this issue of the journal is to be found the fourth and final article "An Old Timer Looks at the Pharmacopœia" by Dean W. F. Rudd. The purpose of the writing of these articles is so evident and it has been stated so frequently that further comment scarcely seems necessary. Dean Rudd has made a real contribution to Pharmacopœial progress by bringing into the open how the control of the Pharmacopœia has been kept within a comparatively small group of men and one, or at least a few institutions. The writer has been a participant in three Pharmacopœial conventions and at least a casual observer of Pharmacopœial politics for three decades and he has never been able to understand why so little was known about the business of the Pharmacopœia, or why the control of the Pharmacopœia was so bitterly fought for. On page 367 of the July, 1939, issue of this journal the writer commented upon these questions and facetiously, but perhaps unwisely, raised the question why he had not been allowed to share in Pharmacopœial *division*. Two months later at the annual Pharmacopœial breakfast at Atlanta, he learned two things. One was that in the editorial referred to he had unwittingly been playing with fire. The other was that a lot of men connected with the control of the Pharmacopœia have no sense of humor. (He has been told since, by one of America's outstanding scholars, that only one man in a million possesses this sense. This breakfast was the only time the writer has had the honor to be the sole representative of one hundred and thirty million fellow Americans.) The writer had attended during the decade eight other Pharmacopœial breakfasts, all of which would compare favorably to a Methodist love feast or a Presbyterian brotherhood. At none of these eight breakfasts can the writer recall that Pharmacopœial finances were mentioned, not even the cost of the breakfast. But at this ninth one nothing else was mentioned. Even the atmosphere was tense and when the brothers began to speak the writer soon sensed that the stage was all set to deliver some adult education on Pharmacopœial finances for the benefit of the Editor of the American Journal of Pharmaceutical Education. What happened there is not necessary to repeat here. Sufficient to say that before the close of the day

the President of the Board of Trustees had apologized twice to the Editor for what had occurred at the Pharmacopœial breakfast. What has been said here is not purposeless. It has been said to still further emphasize, if that is necessary, that the whole body pharmaceutic has not been given information about Pharmacopœial business that it had a right to know. The time at the Pharmacopœial breakfast was largely taken up telling how much service the Pharmacopœia got out of certain men and certain laboratories for a little money and how poorly they were paid. These men lost the point entirely. No one has ever said these men were overpaid. The question is why certain men and certain institutions shared in the distribution of these funds and other men and other institutions that were just as qualified to render service were not recognized? This question remains unanswered. The need for secrecy connected with Pharmacopœial revision and Pharmacopœial finances is not understandable. Dean Rudd says when he discussed with a member of the Board of Trustees the writing of the series of articles on "An Old Timer Looks at the Pharmacopœia" he was advised not to, since it would probably do no good and it would certainly make new enemies for any man who would undertake to write them. This statement is beyond the comprehension of the writer. If there is a great group of people who are interested in improving drug standards, and there is, and if this group is not satisfied because of the lack of knowledge about Pharmacopœial control and Pharmacopœial finances, and it is not, then what possible harm could come from the act of making this information common property? It would seem that much good might result from doing so. It would further appear that the statement that anyone who would attempt to enlighten the public on this subject would make new enemies for himself constitutes a threat and one might easily be inclined to think that there was information which the Board did not care to have brought to light. After the publication of the second article of the series "An Old Timer Looks at the Pharmacopœia" began, the Board of Trustees distributed an informative and a financial statement about the Pharmacopœia, both of which were commendable. Never-the-less one still will not have a picture that approaches completion without a study of Dean Rudd's series of articles.

It is most unfortunate that there has crept into the politics of the Pharmacopœial Convention methods which smack of

cheap ward politics. We refer to an incident in the 1930 Convention, when a rumor ran around that if a certain candidate for the chairmanship of the Revision Committee was elected, the medical men would withdraw their support from the Pharmacopœia because they considered him the candidate of the patent medicine interests. That sounds very much like a whispering campaign started on the eve of an election attacking a candidate's private life. More could be said. No more needs to be said. The time has come when bygones should be allowed to be bygones and we should get down to the serious business of Pharmacopœial revision. "An Old Timer Looks at the Pharmacopœia" has given a clearer conception of what is needed to improve the standard for drugs than has ten years of Pharmacopœial breakfasts.

In a previous editorial the writer has expressed not only the desirability, but the necessity of eliminating inbreeding in the control of Pharmacopœial revision and business. And this inbreeding applies, not only to individuals but to institutions as well. In this stand we are certainly supported by the attitude toward inbreeding in our most efficient educational institutions, in our most efficient business and professional organizations and even in the various branches of the government service. Men become decrepit with age, so does an institution, unless a way is found to bring into the institution a constant stream of new and virile blood. We hope that is exactly what the twelfth decennial Pharmacopœial Convention will do for the improvement of the Pharmacopœial machinery. It could do no finer thing, if it desires to win the support of medical men and the respect of intelligent laymen for the Pharmacopœia.

An announcement of a series of preconvention conferences has been made by the General Chairman of the U.S.P. Committee of Revision. These conferences are to be held at the Willard Hotel on May 13, at 2 and 8 o'clock afternoon and evening. The purpose of these conferences is to give anyone who has a contribution or a suggestion to offer concerning any phase of Pharmacopœial revision an opportunity to bring it to the attention of the Revision Committee. This is a step in the right direction and those responsible for it are to be commended.

Recently there has been made public an announcement of the distribution of certain funds under the will of the late Dr. Wallace Clavin Abbott, founder of the Abbott Laboratories. The announcement states that these gifts are "for the benefit of medical, chemical, and surgical science." Under the provisions of the will, Northwestern University receives \$1,500,000. The University of Chicago receives \$1,000,000. Knox College in Galesburg, Illinois, receives \$250,000 and two hospitals in the state of Illinois receive \$250,000 each. It is not the Editor's business to criticize adversely the manner in which personal estates are distributed. It seems to him that a man has a right to distribute his own money. However, it seems so unfair to an observer at this distance that pharmaceutical education institutions were entirely passed up in this case. Certainly the pharmaceutical institutions and the retail druggists have done much to create the Abbott wealth and it seems to me they have a right to expect a substantial contribution to pharmaceutical education and research. Members of the Abbott organization have expressed their sympathy toward this principle and support of it seems to be gaining ground among manufacturers and wholesalers generally. It has become a common practice for manufacturers and the distributors of medical supplies of all kinds to ask colleges of pharmacy to permit their travelling representatives the privileges of our classrooms and the time of our students. This is freely granted. These representatives are unusually appreciative for this privilege and refrain from any offensive advertising, never-the-less, it is mighty good advertising. If it was not so, it would not be continued. We have gone farther than that, we have frequently admitted these representatives to the sessions of the American Association of College of Pharmacy and have given them a place on our program and printed their papers in the American Journal of Pharmaceutical Education. And that is good advertising. The time has come when we think the manufacturers should see the wisdom and the justice of returning a just share of what they make out of the retail druggists and the educational institutions to the support of pharmaceutical education and research.

Science has no boundary lines and the passing of a great scientist, Dr. Alexander Wilhelm Oswald Tschirch, is felt as keenly on this side of the Atlantic as if he had been born and

lived as one of our own. Many a young man has been inspired by personal contacts with this great teacher and investigator and all of us through his writings have felt the urge to greater accomplishments.

Not until the "old guard" began to pass in numbers, did the writer begin to realize what the going would mean to him personally. Dean Stevens belongs to that group of men that stood for progress in pharmaceutical education in what we may call the early days. The idealism of that group was the inspiration which made possible the educational accomplishments of the present day. Dean Stevens will be remembered as a commanding figure in that group.

"The heart of her husband doth safely trust in her, so that he shall have no need of spoil. Give her of the fruit of her hands, and let her own works praise her in the gates." Thus we pay tribute to the kindly, forceful life of Susan King Darbaker and we mourn her loss with her good husband and with him look forward to the comfort and the hope that the Easter season brings.

Rufus A. Lyman.

The Summer Meetings of the American Association for the Advancement of Science

The summer meetings of the American Association for the Advancement of Science will be held in Seattle, Washington, June 13 to 17 inclusive. Papers in pharmacy will be presented in Section N2 of the Medical Sciences. Research workers in pharmacy are urgently requested to present their work before this organization and to make these meetings as successful at this time as they have been in the past. Work reported may be published anywhere or at any time the author wishes. It is necessary, however, that an abstract of about 300 words be sent to the chairman in order to appear on the program of the meeting and in various pharmaceutical publications. Abstracts should be in the hands of the chairman not later than May 1, 1940. Whether a paper is presented before the section or not, everyone is urged to attend the sessions of the Association. These will be held on the campus of the University of Washington and a cordial welcome will be awaiting all pharmacists at the College of Pharmacy.

J. M. Dille, Chairman,
Pharmacy Section N2 of Medical Sciences
American Association for the Advancement
of Science.

GLEANINGS FROM THE EDITOR'S MAIL

I am happy to advise you regarding the joint meeting of Buffalo pharmacists and physicians. For two years I have been attempting to get our Academy of Pharmacy to join with the local Academy of Medicine in meetings of mutual interest. Not getting any action, I made my own arrangements with the Academy of Medicine and advertised it as one of the regular meetings of the local branch of the American Pharmaceutical Association.

The Academy formally invited the local branch to meet with them and arranged a special program that would be of interest to pharmacists as well as physicians. It was a question box type of program. Written questions on therapeutics, compounding and dispensing and other allied topics were submitted to a panel of four physicians and two pharmacists. The master of ceremonies was Dr. L. Maxwell Lockie, who is professor of therapeutics in our medical school and a graduate of our school of pharmacy. I was told that there were eighty pharmacists and two hundred physicians in attendance. The questions were interesting and well answered. The two pharmacists ably represented our profession.

During the course of the evening, one of the physicians, a leading Buffalo gastro-enterologist, stated that it was his practice to advise his patients to go to the drug store and buy simple things like calcium carbonate and bismuth subcarbonate because he found that the pharmacists found it necessary to make too great a differential in charge when such items are ordered by written prescription. The next day a local druggist wrote the physician as follows, "I resent your insulting remarks regarding pharmacy at the Academy of Medicine on Wednesday. You know you have often charged ten dollars for a fake diagnosis". The physician invited the druggist to drop in some day and discuss the whole matter. When I heard of the incident, I also wrote the druggist that this desired spirit of cooperation can only be achieved by tolerance and understanding. I am sure that the attitude expressed in his letter can bring us only more contempt and less cooperation from the medical profession. We do not like some of the things the physicians do and they do not like many of the things we do. There is need of mutual improvement and these joint meetings will accomplish that if handled diplomatically. There was nothing insulting in the incident referred to. I am telling you all this to show how the pharmacists themselves spoil our efforts toward interprofessional cooperation.

We were planning on reciprocating by inviting the Academy of Medicine and the Buffalo Dental Association to be our guests in the near future, but I am running into some opposition from retailers who feel that joint meetings only lead to hard feelings. Sometimes I get irked by the narrow-minded attitude of too many pharmacists. However, we are going ahead with our plans and I am sure that only good can come out of joint meetings if they are properly conducted and the hot-heads submerged.

Plans are under way to have a joint committee from the Academy of Medicine and the local branch consider the Wayne County (Detroit) Medical Society's plan.

I was very favorably impressed with "Pharmaceutical Education on the March" appearing in the last issue of the Journal. I got a number of helpful suggestions and it was refreshing to read the programs of so many sister institutions. I have often felt that a part of the annual meeting of the Association might well be devoted to a discussion of administrative problems, such as only the deans have to struggle with. Exchanges of ideas are always helpful, based on the logic of the old wheeze that two heads are better than one.

A. B. LEMON,

February 7, 1940.

University of Buffalo College of Pharmacy.

I have been hearing quite a bit about the publication, *The American Journal of Pharmaceutical Education*, and I should like very much to receive it. Can we work out an exchange arrangement?

By the way, I am especially interested in seeing a recent issue which I understand contains an analysis of drug trade publications. Would you be kind enough to send a copy to me?

N.A.R.D. Journal,

February 19, 1940.

G. A. BENDER, *Editor*.

Allow me to thank you for the recent numbers sent me of the *American Journal of Pharmaceutical Education*. I am greatly impressed with the high quality of the contributions and have received decided enlightenment from their perusal.

Though time has elapsed since I practiced pharmacy, I still have leanings toward my first love.

WALTER A. BASTEDO, *President*,

United States Pharmacopœial Convention 1930-1940,

February 21, 1940. New York City, N. Y.

The January number of the *American Journal of Pharmaceutical Education* is just at hand, and it is with a great deal of appreciation that I have paged through its contents. I think you are to be congratulated that you have secured such a wide variety of interesting papers as are contained in this number. In my opinion, it is the most interesting number you have yet edited, and if you can keep up to this high standard for the remainder of the year, Volume 4 will set a goal hard to equal in succeeding years.

HOWARD B. LEWIS,

February 1, 1940.

College of Pharmacy, University of Michigan.

I have noted with considerable interest your article on *The Perfect Curriculum* as it appears in the November issue of *Modern Pharmacy*. Inasmuch as I definitely decided in October, 1897, that I would endeavor to make education and teaching my life work, and inasmuch as the thoughts expressed in your article so closely parallel my viewpoint in education, I cannot refrain from expressing my deep appreciation for the manner in which you have set forth these ideals.

Further, I can most heartily agree with the thoughts expressed by Dr. Ernest Little of Rutgers because of my own liberal arts and professional background. However, I am not convinced that some of his suggestions should be made a requirement for every person who desires to become a pharmacist. I do not regret in the least the time

I spent in Latin, German, and Spanish. Neither do I regret the time I spent in the general study of the natural sciences, particularly biology. I should be very happy indeed if every prospective pharmacist could have a broader educational background before taking up the study of pharmacy, yet I am most thoroughly convinced that many young men and women who have aptitudes for pharmacy, backed by an excellent professional spirit and desire to work in the pharmacy division of a great health service program, have been and are rendering very valuable service.

There are a variety of services essential to the proper functioning of pharmacy. For this reason, I am in sympathy with the idea of a flexible program that will permit these young men and women to prepare themselves better in that division of service for which they show special aptitudes and interests. In the field of graduate education we are aware that the better graduate schools are not straight-jacketed in all fields of education. Some are superior in one field, others in another field. I am not inclined to find fault with these dominant characteristics of the various schools.

Permit me to say again that I am most heartily in accord with the thoughts which you have expressed and not too much opposed to those as expressed by Dean Little. Perhaps Dean Little's viewpoint is very much in harmony with his own section of the country. Areas more sparsely inhabited need a good health service program too. Leaders in pharmacy should do all they can for sound pharmaceutical education and service. Education without the proper spirit to serve cannot be considered of much value.

RUDOLPH H. RAABE,

February 3, 1940.

College of Pharmacy, Ohio Northern University.

Thank you for your courteous note of the 7th. I received the January issue of the Journal. My friend Lee Adams sent his subscription and mine, or to be a little more exact, he made me a present of the subscription. I've read some of the Journal but not all. I greatly enjoyed the article by Professor Lee of Purdue—"First Courses in Pharmacy". I could scarcely believe that dear old Doctor Prescott was "at it" in Michigan before I was born. I had him in Organic toward the end of the last century. I realize now that he was pretty old then but somehow did not think of it at that time. I doubt if he was ever what we would call "a good teacher" in the sense that he had that dynamic way which seems an essential part of imparting information. But if he lacked that, he had a thousand other endearing and supreme qualities. I think the oil painting of him is the only painting of any dean of the University of Michigan in the pharmacy building.

You have a very fine little magazine. Through it and through the free expression of opinion its pages affords, you should be able in time to evolve courses in pharmacy that would meet the needs of pharmacy as it exists today, rather than a hypothetical pharmacy that exists only in the Syllabus.

February 26, 1940.

J. A. Hynes, Chicago, Ill.

The "Evaluation of Pharmacy Journals" by Ralph E. Ellsworth, in your January number is of particular interest to me. I enclose a

check for \$1.00 being payment for two copies of this number. If you maintain an exchange list, I would be glad to place your Journal on my list in exchange for the same courtesy. I believe such an arrangement would be mutually advantageous.

Proprietary Drugs,
JOHN P. RUDDICK, *Editor*,
Washington, D. C.

February 6, 1940.

Inclosed find my check for \$2.00 for which please enter my name on your mailing list for the Journal. As chairman of the Iowa Pharmaceutical Association Legislative Committee I am sure I will find it very useful.

J. CLINTON MARSHALL,
Hampton, Iowa.

February 18, 1940.

Although four copies of your journal are available to the faculty of the Brooklyn College of Pharmacy, several members regard the publication of such value as to make it a part of their personal libraries. I am, therefore, enclosing a check for six dollars, for which please enter the following subscriptions for one year commencing with 1940. We would appreciate as soon as possible January copies of the Journal.

BERL S. ALTDOT,
Brooklyn College of Pharmacy.

February 19, 1940.

On page 353 of the American Journal of Pharmaceutical Education of July, 1939, is an editorial bearing the title "Shall We Permit Quiz Schools to Write Our Laws?" This is a very well written editorial and we would like to gain permission to send either reprints or mimeographed copies of it to our alumni. There is a movement on foot, under the guise of "abolishing assistant-pharmacist registration" in this state (fostered, of course, by the same outfit) but proposing to make the proposed law effective several years hence and planning in its provisions to award full registration at the time the law becomes operative. One does not have to be endowed with unusual wisdom to see the nigger in the woodpile. What we want to do is to educate our alumni to the necessity of protecting their registration status and not cheapen it by running another thousand through the mill before such a law could stop it.

HOMER C. WASHBURN,
University of Colorado.

January 18, 1940.

Just a note to tell you that I think the change you made in the paper for the Journal was excellent. It is now possible to open the Journal to the page you desire and not have to employ a brick to keep it in that position.

LOUIS C. ZOFF,
State University of Iowa.

February 8, 1940.

I have had the doubtful pleasure of teaching a course in pharmaceutical arithmetic and always felt as you do about it. I never lost an opportunity to tell my classes that the problems all were of grade school level and that there was no real reason for considering most of the problems as at all difficult. I quite agree with you that pharmaceutical

arithmetic and pharmaceutical Latin as separate courses should be eliminated from our college curricula. It would seem that a college student should be able to acquire sufficient practice in such work as a part of other courses in pharmacy. If we can ever eliminate the apothecaries system of weights and measures and confine ourselves to the use of the metric system, a good share of the excuse for a course in pharmaceutical arithmetic should be eliminated. Be assured that you have my continued support in objecting to such courses and attempting to dignify the curriculum of the colleges of pharmacy.

EDWARD C. WATTS, *Assistant Chief Pharmacist*,
January 17, 1940. University Hospital, Ann Arbor, Michigan.

Since our last news letter dated August 2, 1939, addressed to journals and individual friends, the Department of Pharmacy of the West China Union University has been very fortunate in securing a research professorship from the British Boxer Indemnity Administration for work in the Division of Chinese Drug Research. We are also extremely fortunate in securing the services for this position of Dr. T. H. Tang, one of the most outstanding men in his line in China today. Dr. Tang is a Java-born Chinese scientist who received much of his training in the University of Berlin, Germany, and later gained very extensive and valuable experience in scientific research during about nine years as a member of the scientific staff of Shantung University, Tsintao, North China. Dr. Tang has to his credit a large number of scientific articles written during recent years which have already been published. It gives me much pleasure, therefore, to introduce to your many Journal readers and other interested friends, Dr. T. H. Tang, Scientist and Director of the Division of Research of the Department of Pharmacy of the West China Union University, and to enclose herewith for publication in your valuable Journal two scientific articles just completed by him, viz.—“Chemical Studies on the Roots of *Clematis Angustifolia*, Jacq.” and “Female Hormone in the Bituminous Coal from Shangtung Province.” We will appreciate it if you will publish these two articles in an early issue of your Journal. We will also appreciate it if you will send us an extra copy of the Journal containing these articles.

E. N. MEUSER,
December 14, 1939. West China Union University.

(The articles by Dr. Tang referred to in the above letter are strictly of a scientific nature and definitely belong to a scientific journal. They have been referred to the Editor of Pharmaceutical Archives for publication in that Journal.—Editor.)

I have been ambitious to improve the School of Pharmacy of our University, not as a member of the state board, but as a private and interested member of my profession. I know that with but one school in a state as large as ours and with the almost unlimited financial resources that we have, that Texas could have the greatest and most completely equipped school of pharmacy in the world. We are an empire of our own here and all of the resources of this state go to one accredited school as well as all of our students in pharmacy. I think our opportunity is so great to be of service to our people that we should grasp it.

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I am trying to assemble facts and data that will be of help toward the task to which I have set myself.

December 24, 1939. R. L. WILSON,
Texas Board of Pharmacy, Livingston, Texas.

I am writing to inquire if the American Journal of Pharmaceutical Education is available to druggists, or if it is limited to schools alone. As time goes on we are all interested in the new things that are coming up. If this publication is not available, perhaps you can suggest some other paper in this field.

March 4, 1940.

LEWIS BROTT,
Allegan, Michigan.

I note by the slip you sent out notifying that the 1940 dues were now due that this is for Volume 4 of the Journal. It hardly seems to me that three years could have passed so quickly, yet I know it to be true. Perhaps you are glad that it is no longer your duty to compile the annual report, but I must say that I feel there is something to having the material all under one cover for each of the years. And as for current material, I feel that the section in the Journal of the American Pharmaceutical Association could have been expanded to take care of it to best advantage. Of course, we have the new journal and we must carry it on although I should think it would be a difficult task on the amount that comes in for subscriptions to it.

To Miss Cooper.
February 23, 1940.

RALPH E. TERRY,
University of Illinois.

The first number of the new volume of the American Journal of Pharmaceutical Education came to hand today and reminded me of the fact that I had not renewed my subscription. I enjoyed reading the last volume and I want to thank you for calling my attention to the Journal. It has given me a bird's eye view, so to speak, of present day affairs in pharmaceutical education.

To Miss Cooper.
February 2, 1940.

JOSEPH J. PFIFFING,
Ann Arbor, Michigan.

As further evidence that we of the faculty of the Brooklyn College of Pharmacy appreciate your fine work in editing the Journal, I am enclosing a check for which please enter the subscription of Dr. Joseph S. Goldwag, 200 W. 86th Street, New York City, and please forward to each of the last four subscribers: Benjamin L. Milana, August E. Wilkoc, Joseph S. Goldwag and Berl S. Alstodt, the three volumes of your Journal. I realize that it is quite discouraging to find that some object to the existence and achievements of the Journal. No doubt the instructor, who believes the publishing of the Journal to be a mistake, is ignorant of the work done and the unusual interest stimulated by the Journal in pharmaceutical education. I am sure that you will not be discouraged by the few expressions of dissatisfaction, but rather be encouraged by your numerous friends who appreciate your excellent work.

March 6, 1940.

BERL S. ALSTODT,
Brooklyn College of Pharmacy.

I would also like to register my vote of approval of the Journal. I, along with many others, feel that it is filling a long-felt want in pharmaceutical literature. Has there been to date an effort or proposal for establishing in the Journal a "Department of Clearance" for pharmaceutical literature? We have found in our library a shortage of several volumes of the various pharmaceutical journals and duplicates of others and the possibility of exchange has been considered. However, unless we obtain from some source a list of those available at libraries, such a procedure would be difficult to carry out. Perhaps the idea is out of line for inclusion in the Journal, but would like to offer it as a suggestion.

March 6, 1940.

D. T. MEREDITH,
Detroit Institute of Technology.

New in the Family

JEAN LEE MEREDITH,—Born December 30, 1939, daughter of Professor and Mrs. D. T. Meredith, Detroit Institute of Technology.

ALICE HILL RUSSELL,—Born December 16, 1939, daughter of Professor and Mrs. James D. Russell. Detroit Institute of Technology.

NANCY GRILL,—Born December 25, 1939, daughter of Professor and Mrs. Frederick Grill. North Pacific College of Oregon.

DAVID LYMAN KNIGHT,—Born January 8, 1940, son of Professor and Mrs. W. W. Knight, grandson of Dr. and Mrs. R. A. Lyman. University of Nebraska.

CHARLES O. WILSON III,—Born January 14, 1940, son of Dr. and Mrs. Charles O. Wilson. School of Pharmacy, George Washington University.

Married in New York City, January 31, 1940. Miss Dorothy Stewart, daughter of Mr. and Mrs. Harry D. Stewart of McCook, Nebraska and Mr. Robert W. Little, son of Dean and Mrs. Ernest Little of New Brunswick, New Jersey. Dr. William Demarest performed the ceremony. The bride is a former student of the University of Nebraska. The groom is a graduate student and assistant instructor at Columbia University.

Professor Esteban Nunez Melendez of the College of Pharmacy of the University of Puerto Rico and Miss Emilia Hoyo Rucabado, a graduate of the College of Pharmacy, were married recently. Mrs. Melendez owns and manages a drug store in the center of the island. As an undergraduate she made a high scholastic record.

The American Journal of Pharmaceutical Education joins the pharmaceutical profession of America in extending greetings to Dr. Edward Kremers of the University of Wisconsin on the occasion of his seventy-fifth birthday, April 4, 1940. We are grateful for the inspiration he has brought to us through sixty years of devoted service to the cause of pharmacy.

NOTES AND NEWS

Because of his new work as chairman of the National Formulary Committee, Dr. Justin L. Powers has resigned the chairmanship of the Committee on Curriculum and Teaching Methods. Dr. George L. Webster has been named in his place.

Dr. Alva G. Hall has been made Acting Dean of the College of Pharmacy, University of Southern California.

The third annual retailers school, sponsored jointly by the School of Pharmacy, the Oklahoma Pharmaceutical Association, the Oklahoma Drug Travelers Institute, and the Oklahoma Board of Pharmacy, was held in Norman on February 13, 14, and 15. The gross registration reached 600 and 425 retailers attended.

Harrison H. Gibb, 1909, College of Pharmacy, State University of Iowa, has recently been installed as president of the Iowa Pharmaceutical Association and Loren R. Henderson, 1904, has been appointed to the Iowa Board of Examiners. Nicolas W. Solonen, graduate assistant in pharmacy has been elected to Phi Lambda Upsilon. Prof. L. C. Zopf and Dean R. A. Kuever were on the program of the State Association meeting held in February. Dean Emeritus Wilbur J. Teeters is on a pleasure trip in Florida. The total pharmacy registration for the second semester is 143. Five graduate students have majors or minors in pharmacy.

The second annual seminar on modern pharmaceutical practice was held at the Philadelphia College of Pharmacy and Science, January 29-31. The program consisted of lectures given by twenty members of the faculty. About one hundred practicing pharmacists attended.

In the report of the 1939 Plant Science Seminar (*Am. Jour. Pharms. Ed. Vol. III, page 451, line 3*) it is stated that 145 trees are listed for North Carolina. It should have been stated that the 145 trees are listed for the North Carolina mountain region, there being 223 trees listed for the entire state of North Carolina.

The Board of Trustees of the U. S. Pharmacopoeial Convention has just announced that the enforcement of the new U.S.P. standards for Purified Cotton (Absorbent Cotton) recently issued in the "Second U.S.P. XI Supplement" will not be effective until July 1, 1940.

Dean Ivor Griffith of the Philadelphia College of Pharmacy and Science has been appointed to the Advisory Board of Health of the Commonwealth of Pennsylvania by Governor Arthur H. James. On February 23, the College celebrated the 119th anniversary of its founding. Dr. Robert P. Fischelis of New Jersey was the guest speaker. His subject was "The Place of Pharmacy in the Public Health Picture of Tomorrow".

The Michigan Board of Pharmacy Examiners have made it possible for pharmacy students to take the examination for licensure immediately upon graduation from college. Licenses will then be withheld until the apprenticeship required by law has been completed.

Dean Hugh C. Muldoon of the College of Pharmacy conducted a round table conference for chemistry teachers at the eighth annual conference, held late in February at Duquesne University, for teachers of science in Catholic high schools.

A series of lectures is being given for practicing pharmacists by the faculty of the Pittsburgh College of Pharmacy. They cover the recent work in vitamins, hormones, and organic and inorganic pharmaceuticals.

On February 13, Mr. Dan Houser of the Michigan Board of Pharmacy spoke to the students of the College of Pharmacy of the Detroit Institute of Technology upon the aims and the accomplishments of the Board. The College of Pharmacy is cooperating with the Wayne County Medical Society and the Y.M.C.A. in presenting a series of popular lectures dealing with problems of public health.

During the months of February and March, the Lackawanna County Pharmaceutical Association conducted a pharmacy seminar for druggists. It was held at Scranton and the discussions were led by the members of the faculty of the School of Pharmacy of Temple University.

Professor Abraham Taub of Columbia University College of Pharmacy, has just been elected a Fellow of the American Institute of Chemists. Saul Bell is doing graduate work in pharmacy. He is the first incumbent of the Bigelow Fellowship. Post-doctoral fellowships are now held by Samuel Zweig and Bernard Blumberg. The former is conducting researches on dentifrices and the latter on cocoa. Frederick D. Lascoff recently delivered a series of four lectures on pharmaceutical problems before the staff conferences on pharmacology at Columbia University, College of Physicians and Surgeons. The College of Pharmacy participated at the Bronx County Medical Society Convention on January 17 with an exhibit of Newer Chemotherapeutic Agents. On February 10 the College had five series of exhibits at the New York Microscopical Exhibition held at the Museum of Natural History. Dr. Semour Stern, Plant Fellow at London in 1938, has been appointed Control Chemist for the American Pharmaceutical Company.

As a result of the examination held for pharmacists on November 13-17, 1939, the Medical Department of the Army announces that seven candidates were successful, as follows: Paul C. Larnce, San Antonio, Texas; Elliott P. Rigsby, Chapel Hill, North Carolina; Thomas F. Criswell, Jr., Brian, Texas; Emerson B. Taylor, Seattle, Washington; Woodrow C. Herbert, Salt Lake City, Utah; Edward C. Rogowski, Chicago, Illinois; Charles J. Mrazek, Jr., Chicago, Illinois. Of the successful candidates, the first five named have been commissioned as Second Lieutenants in the Medical Administrative Corps, Regular Army. The other two named will be held until vacancies occur.

"American Pharmacy" was the subject of the *World Is Yours* broadcast, sponsored by the United States Office of Education, over a nationwide network, Sunday, March 24. This broadcast is heard by 4,000,000 people in all parts of the United States and some foreign countries.

W. H. Michelson, a sophomore in pharmacy at Alabama Polytechnic Institute, has been awarded the Rho Chi medal for having the highest average in his class the freshman year. B. J. Eich, a senior, has been elected a member of Phi Kappa Phi.

The School of Pharmacy of Washington State College will have two fellowships with a value of \$450 each and several graduate scholarships varying in value from \$130 to \$150 each, open for the next academic year. They also carry remission of out state tuition fees. Dr. K. L. Kauf-

man recently spoke before the local Sigma Xi chapter upon the Assay of Certain Alkaloidal Drugs and their Preparations. Dr. Kaufman has also been elected one of the three representatives of the college senate on the newly organized Washington State College Research Foundation. Two alumni have been named delegates to the United States Pharmacopœial Convention. They are Dr. T. Lowell Swenson, Director of the U.S.D.A. Western Research Laboratory at San Francisco, and Lieut. Glenn K. Smith of the Medical Administrative Corp of the Army, Pharmacy Division. Lieut. Reed is now stationed at Walter Reed Hospital, Washington, D. C.

Bertha Baron, University of Texas, 1935, has returned to the College of Pharmacy to carry on research work on certain Mexican drugs which are imported through the Mexican Council for research purposes only. Hugh Hanson has been appointed a laboratory assistant in pharmacy. During pharmacy week window displays were made in the Austin drug stores by students under faculty supervision. Within a period of a year T. J. Richards, T. F. Criswell, and Paul Larnee, all graduates of the University of Texas have been appointed second lieutenants in the Medical Administrative Corps of the Army.

Harold S. Feldman, 1939 honor student at the Massachusetts College of Pharmacy, now holding a National Formulary fellowship in pharmacognosy under a research grant from the American Pharmaceutical Association, is making a study of the saponin content of *Chionanthus*.

C. C. Oates, who holds a National Formulary research fellowship at the College of Pharmacy of the University of North Carolina, under a grant from the American Pharmaceutical Association, has completed a bibliography on the literature of the preparations of bismuth. It includes about nine hundred carefully classified and indexed abstracts. He is now making a study of the prophylactic value and the curative properties of the bismuth salts in syphilis when administered orally to rabbits infected with syphilitic parasite.

Victor Lindblade, 1938, technician in the College of Pharmacy of the University of Illinois, has resigned his position to become an assistant narcotic inspector for the United States government. Charles J. Leone, 1937, has been appointed technician.

Several part time graduate assistantships with majors in pharmacy, pharmaceutical chemistry, pharmacognosy or pharmacology are available at the University of Florida. They amount to \$450 each with the remission of fees. Complimentary membership certificates in the Florida State Pharmaceutical Association for one year have been presented to all pharmacy seniors of the School of Pharmacy.

The University of North Carolina offers a graduate assistantship, \$450, with remission of fees for 1940-41. The major may be taken in either pharmacy or pharmaceutical chemistry.

The tenth annual druggists' business conference was held at Purdue on March 13 and 14. The program was given largely by the Purdue faculty and officers of the health organizations within the state.

At the January meeting of the Association for the Advancement of Professional Pharmacy, Dr. E. L. Harmon, Director of Grasslands Hospital, White Plains, New York, spoke on the subject—The Hospital and the Professional Practice of Pharmacy. He said that pharmacy's association with hospitals involves more than a physician-pharmacist rela-

tionship. It represents a direct association with all departments and individuals who are a part of such institutions. The hospital pharmacist's duties bring him in contact with administrators, physicians, surgeons, dental surgeons, nurses, and also patients in hospitals maintaining an out-patient department. He also mentioned that at no time has a more favorable hospital relationship existed than that of the present. The American Hospital Association is definitely interested in the hospital pharmacy service and has a standing committee which has been cooperative in developing such services.

Professor C. C. Furnas and Dr. Louis Nahum of Yale University discussed the drugs used in the treatment of cardiac diseases before the student branch of the American Pharmaceutical Association at the Connecticut College of Pharmacy in January. Dean Henry S. Johnson and Professor Leslie B. Barrett and N. W. Fenney were guest speakers at the Danbury Dental Association in January and Dean Johnson spoke before the Shelton-Derby Rotary Club in March. Robert H. Alcorn discussed the narcotic drug traffic before the Lions Club of New Haven recently. Mrs. Mary G. Maier, wife of Professor A. A. Maier died in New Haven on March 6.

Ninth annual pharmaceutical conference sponsored by the College of Pharmacy of the University of Michigan will be held on May 21. The guest speaker, Dean B. V. Christensen, Ohio State University, will speak on Recruiting for the Profession of Pharmacy. Other speakers and their subjects scheduled for the program are—Mr. Arthur Secord of the University Extension Service, Developing an Effective Personality; Dr. Arthur C. Curtis of the Department of Internal Medicine, Sulfapyridine and Anti-sera in the Treatment of Lobar Pneumonia; and Dr. Bradley M. Patten of the Medical School, Micro-moving Pictures of Living Embryos at Various Stages in Their Development.

Mr. Bernard Bialk, Secretary of the Michigan Branch of the American Pharmaceutical Association is offering a year's membership in the American Pharmaceutical Association as a prize for the best paper based on a survey of old prescriptions. The prescriptions used in the survey are from the Charles Mann Store and date back to 1900.

The Rt. Reverend William P. Remington, bishop of the district of Eastern Oregon Episcopal diocese, recently addressed the senior students of the School of Pharmacy of the Oregon State College on the activities of his father, the late Joseph P. Remington and his association with the founders of American Pharmacy. Frank R. Henry, second lieutenant in the Reserve Corp of the United States Army, on active duty under the Thomason act with the 15th Infantry, has been transferred from Fort Lewis, Washington, to Camp Ord, Monterey, California, for a short period of military maneuvers. During the current school year members of the pharmacy faculty will give twelve radio talks over station KOAC.

Professor Alvah G. Hall has been elected to the deanship of the College of Pharmacy of the University of Southern California filling the place made vacant by the recent death of Dean Laird J. Stabler.

Professor Luis Torres-Diaz has been made Acting Dean of the College of Pharmacy of the University of Puerto Rico replacing Dean Lucas L. Velez who is in poor health.

Professor Richard S. Warner, Detroit Institute of Technology, un-

derwent an appendectomy late in February. During his period of convalescent period, Dr. John Anderson will carry his classwork and Professor Donald Merideth will act as collaborator for the Journal.

Dorothy Faris, Professor of Bacteriology, University of Idaho, College of Pharmacy, who is on leave for a year, will spend the last six months of the time at Lister Institute in Sydney, Australia, instead of in London as she had originally planned.

Dean Earl R. Serles, for many years Dean of the South Dakota State College, Division of Pharmacy, has resigned to accept the deanship of the School of Pharmacy, University of Illinois, effective July 1, 1940. Dean Serles has asked to be relieved of the Chairmanship of the Committee of Boards and Colleges and Dean Howard C. Newton of Massachusetts has been named to fill the vacancy.

It is announced that Acting Dean Forrest J. Goodrich of the College of Pharmacy of the University of Washington has recently been made Dean, filling the vacancy resulting from the retirement of Dean C. W. Johnson.

Dr. Paul J. Jannke of the College of Pharmacy, University of Nebraska, has been advanced to the assistant professorial rank.

Dean Hugo H. Schaefer of the Brooklyn College of Pharmacy is chairman of the Health Committee of New York. He has recently addressed numerous pharmaceutical organizations on the federal, state and city regulations as they affect the retail pharmacist. The committee which represents the Pharmaceutical Council of New York City is co-operating with the Board of Health in formulating a new section of the Sanitary Code which aims to regulate the labeling and sale of drugs so as to adequately protect the public.

Dr. Cosmo Ligorio has been appointed chairman of the Committee on Progress of Pharmacy of the New York branch of the American Pharmaceutical Association.

The Kiwanis Club of Richmond has recently presented \$1000 to the Medical College of Virginia as a loan fund for senior students of the four schools.

Beginning September 1, 1940, the pharmacy in the George Washington hospital will be under the supervision of the School of Pharmacy. A staff member will be in charge and senior students will receive training in hospital pharmacy. James M. Macuilla is engaged in a research on ephedrine sprays. Dr. C. O. Wilson has been elected secretary of the Washington City Branch of the American Pharmaceutical Association.

Dean J. Lester Hayman spoke recently before the honorary economics fraternity of West Virginia on the subject "Various Maintenance Laws." Professor G. E. Bergy has been elected to Sigma Xi. He has also been named on the Sub-committee on External Preparations of the National Formulary. He recently addressed the Westminster Club of the University on the subject "Cosmetics and External Preparations." The Capsule Club has been organized in the College of Pharmacy to function as an honorary society.

News comes that Dr. H. C. Christensen is recovering from his recent illness. For his return to health we are most grateful.

PHARMACEUTICAL EDUCATION ON THE MARCH

"It will mean much to pharmaceutical progress if we can show each quarter some concrete evidence that Pharmaceutical Education is on the March."—Editor.

Fordham University, College of Pharmacy.

To Foster the Spiritual Lives of the Students.—Early in October at the request of about one hundred Catholic students a Sodality was established for students of pharmacy. The organization meeting was moderated by the Reverend Charles J. Dean, Vice-President and Secretary General of the University and Regent of the College of Pharmacy. Meetings are held bi-monthly. This effort for the spiritual uplift of the professional students is most commendable.

New Laboratory Courses and Equipment.—Next September laboratory work will be instituted in experimental physiology and pharmacology. A laboratory has been remodeled for the purpose. It includes a sanitary animal room. Students will also act as experimental animals in appropriate instances. The preparations for such experiments will be prepared in the Department of Pharmacy. The practice pharmacy established in 1837 by the alumni has grown in importance as a teaching tool.

The Library.—A full-time librarian has been placed in charge. About one hundred new periodicals, including scientific, trade, and state journals have been added. Also many old and new texts representing both the basic and professional fields. The entire library has been catalogued according to the Library of Congress system.

State College of Washington, School of Pharmacy.

Graduate Work and New Courses.—The petition of the School of Pharmacy of the State College of Washington that it be permitted to grant the degree of Doctor of Philosophy has been approved by the Graduate Studies Committee, the College Senate, and the Board of Regents. In connection with this petition, the twenty members of the Graduate Studies Committee carefully investigated the qualifications of the staff and the available library, laboratory, and teaching facilities. Permission was given to grant the degree in the two major fields of pharmacy and pharmaceutical chemistry, with minors including pharmacognosy and pharmacology, chemistry, botany, bacteriology, and zoology. To provide course work adequate for this program, fourteen advanced courses are being added to the School of Pharmacy curriculum, including courses in pharmaceutical assay, alkaloids, synthetic medicinals, pharmacology, enzymes, and emulsions.

Medical College of Virginia, School of Pharmacy.

Internships in Pharmacy.—The College of Virginia announces the following internships available July 1, 1940. Rotating internship in hospital pharmacy. This service includes the compounding of outpatient and hospital prescriptions, pharmaceutical manufacturing, the preparation of sterile solutions, stains, dyes, ampuls and other pharmaceutical

work of a specialized nature. Compensation \$12.00 per month and maintenance. Resident internship in hospital pharmacy. Prerequisite: one year's experience in hospital pharmacy. This service offers an opportunity for library research, individual investigation, and experience in student and intern instructing. Compensation \$50.00 per month and maintenance. Medical, dental and pharmacy interns occupy the same dormitory. This affords an opportunity for exchange of ideas which proves mutually helpful.

Montana State University, School of Pharmacy.

New Pharmacy-Chemistry Building.—The building is 125 feet long and 69 feet wide, with four floors and a full basement, and is of fire proof construction throughout. Cold air from the outside is heated as it is drawn into the building. Each heater as well as each room is provided with a thermostat. All air conduits are of stainless steel monel metal. Glass in the skylight for the freshman chemistry laboratory is one of the filter type. The laboratory tables and other items are provided with double electric outlets, gas, air, and water. Both laboratories and lecture rooms are provided with A.C. and D.C. outlets. Laboratory table tops are covered with transite (abestos and cement), and painted with acid resisting paint. All floors are of mastic tile in colors brick red and green. The dispensing room is provided with mercury vapor lamps, providing daylight when artificial lighting is needed. All balance room tables are of re-enforced concrete to insure against vibration, and each balance is provided with flexible arm lighting shadowless globes throughout. Hot and cold water mixers are provided with the usual electric panel for distribution of D.C. current for direct intermittent and multiple use. Each laboratory table has double electric A.C. outlets, compressed air, gas, water, and a small sink in the center. The first floor is devoted largely to lecture rooms, a combined pharmacy and chemistry library, the Pharmacy School office, practice pharmacy room, and a pharmacology laboratory. The large lecture room, which accommodates 175 students, is provided with projection apparatus. The basement is devoted to a mechanical room, rest rooms, and toilets for men and for women, a central store room, a chemistry store room, and a pharmacy store room. For explosives, a vault constructed of solid cement is just outside of the main basement wall. An electric elevator to the top floor is to be used for moving supplies. Electric lighting for rooms and laboratories is provided with shadowless globes. Each office is connected by telephone with the administration building. Double electric outlets for desk lamps and other equipment are provided. Each room has a wall clock. The building has a main central stairway and one at each end. The halls are nine feet wide and are provided with fire extinguishers, sirens, and all plumbing is provided with panels so that it may be inspected or repaired without interfering with construction. The cost was \$300,000.

Brooklyn College of Pharmacy.

Advisory System.—The faculty advisory system has been introduced whereby a limited number of first year students are assigned to each instructor who will advise and guide the student throughout his whole school career.

New Equipment.—A considerable amount of new equipment has

just been added, including a refractometer, a calorimeter, a compressed tablet machine, a pH control and a photomicrographic apparatus.

University of Nebraska, College of Pharmacy.

New Equipment.—A storage cabinet with a capacity of about 700 frogs has been constructed. The cabinet is provided with removable trays which have screen lids. The trays are commodious and supplied with running water at a controlled temperature and an adjustable water level. This cabinet is built as an adjunct to a large water tank holding several hundred individual frog cages at its top; the temperature of the water in this tank is readily and accurately adjustable between 10 and 50 degrees centigrade.

Dr. Robert L. Swain Calls Attention to a Great Need and a Great Opportunity

Pharmacy should be more closely identified with the truly magnificent progress being made in the conquest of disease through research. Pharmaceutical education, fortunately, is in gear with modern science, and is being directed by men alive to the needs of today. Pharmacy graduates are well equipped for a real place in the professional life of the community. Our educators long since sensed the need for an educational system which would fit in logically with the expanding medical field, which, even years ago, began to show its broad, sweeping outlines. But the progress in medical science seems not to have greatly disturbed the rank and file of pharmacists. They seem not to have caught the spirit of medical and pharmaceutical education. The magnificent pageantry of medical advance seems not to have stirred them with a desire to have a part in the most thrilling drama of our times. Engrossed in other things, they are allowing other agencies and other philosophies to usurp their place in the public health field. Pharmacists should wake up to what is going on around them. Science has become news of the first importance. There is a certain awareness on the part of the public that the medical sciences are on the march.

ROBERT L. SWAIN.

What pharmaceutical education most needs is the militant moral and financial support of the retail druggist.

MISCELLANEOUS ITEMS OF INTEREST

Memorials

SUSAN KING DARBAKER

Susan King Darbaker died at her home on January 1, 1940, after an illness of several months. She was born in Emlenton, Pa., and her entire life was spent in Pittsburgh and vicinity. She was married on August 15, 1915, to Dr. L. K. Darbaker, Professor of Bacteriology and Pharmacognosy at the School of Pharmacy, University of Pittsburgh.

Always an aesthetic lover of nature, she collected representative flora from many sections of the United States during the sessions of the National Plant Science Seminar. She lived among the flowers she loved. In the summer her garden was filled with odd and beautiful varieties of plants, and in the winter she transplanted them to the windows of her home. She was an active member of the Botanical Society of Western Pennsylvania for many years and regularly attended the field trips of that organization. Her appreciation of nature extended to the animal world and she engaged in the work of the Audubon Society. She was also interested in the various civic and welfare organizations of her community, among which were the Historical Society of Western Pennsylvania and the Pittsburgh Academy of Science and Art.

Ever kind and considerate and ready to give her time and energy to help her most casual acquaintance, her death was a great loss to all who knew her.

Edward P. Claus.

ALVISO BURDETTE STEVENS

Alviso Burdette Stevens, for a period of thirty-three years previous to 1919 a member of the faculty of the College of Pharmacy of the University of Michigan, died at his home in Escondido, California, January 24, 1940. Had he lived until the fifteenth of next June, he would have been eighty-seven years old. For those of us who knew him as a teacher, counselor, and friend, he will never die. It was a pleasure to be in his classes and to work in the laboratory under his direction. By precept and example he knew how to inspire us to do our very best, whether it was in the making of an emulsion or a pill, or in compounding an incompatible prescription.

In early life, circumstances taught him to be self-reliant. He was born on a small farm in Livingston County, Michigan, and attended country school in the winter and worked on the farm the rest of the year. His mother died when he was ten years old, and his father was killed later in the same year in the battle of Cold Harbor, Virginia. From that time on he was handed about from one relative or friend to

another until he was able to shift for himself. At the age of twenty he was graduated from the Saginaw, Michigan, High School, and had meanwhile secured three months of drug store experience. The same year, 1873, he began his studies in the University of Michigan, from which he was graduated two years later with the degree of Pharmaceutical Chemist.

After June, 1875, there followed months of fruitless search for a job all the way from Grand Rapids to Detroit and towns intervening. Finally he found a place as errand boy in a prescription pharmacy on East Jefferson Avenue, Detroit, where he proved himself so useful and competent that within six months he was placed in charge of the store. He continued in that position until 1877 at which time he opened a prescription pharmacy of his own on the corner of Lafayette Boulevard and Shelby Street, Detroit. In addition to filling prescriptions and dispensing sick-room supplies, he conducted an analytical laboratory and, from 1879 to 1882, he taught pharmacy in the Detroit College of Medicine.

In 1886 he was called to the University of Michigan as Instructor in Pharmacy, from which he was advanced in 1890 to the rank of Lecturer in Pharmacy, in 1892 to that of Assistant Professor of Pharmacy, and in 1906 to Junior Professor of Pharmacy. The years 1903-1905 were spent in foreign travel and study, at the end of that time he received the degree of Doctor of Philosophy from the University of Berne, Switzerland. In 1910, he was promoted to the rank of Professor of Pharmacy, and became Acting Dean in 1912 during the temporary absence of Dr. J. O. Schlotterbeck, and was appointed Dean of the College of Pharmacy in 1917, after Dr. Schlotterbeck's death. He retired in June, 1919, and went to California, where he and his son, Don, found activity and sunshine on their seventeen acre ranch just outside the city of Escondido. Mrs. Stevens had not been well for a number of years and died in California in February, 1918.

During his lifetime, Dr. Stevens held many positions of responsibility. When the Detroit Pharmaceutical Society was organized in 1883, he was its first president. In 1894, he was elected President of the Michigan State Pharmaceutical Association. In Pharmacopœial revision work he served on the decennial committees of 1900 and 1910. From 1908 to 1910, he was chairman of the Pharmaceutical Division of the American Chemical Society and was in charge of Pharmaceutical Abstracts for the American Chemical Society from 1905 to 1911. He was First Vice-President of the American Pharmaceutical Association in 1890, and was elected Honorary President in 1919. He served on the third and the fourth revision committees of the National Formulary. His "Arithmetic of Pharmacy" is in the sixth edition and is used in many of the colleges of pharmacy throughout the country. He was also the author of the text, "Pharmacy and Dispensing".

He was a lover of nature and of God's great out-of-doors and it is no wonder that he derived great satisfaction and pleasure in grafting shoots on avocado trees and in making four kinds of oranges grow on a tree that was intended to produce but one. One of his favorite songs was, "In the Garden", and I am told that the choir sang it at his funeral. No more fitting tribute could have been rendered to the memory of this

man whom many of us knew so well for his kindly spirit, his love of all things good, and his indomitable faith in mankind and in the Creator of us all.

Charles H. Stocking.

ALEXANDER WILHELM OSWALD TSCHIRCH

Professor Alexander Wilhelm Oswald Tschirch died at his home in Berne, Switzerland, on December 2, 1939. Born at Guben, October 17, 1856, he became an apprentice in an apothecary at the age of 16. After study at Freiburg, Berne and Berlin he passed his apothecary's examination in 1880 and a year later received the degree of doctor of philosophy. He became assistant in chemistry to Ziurek and later assistant in botany to Pringsheim and Frank in the physiological institute of the agricultural college of Berlin. In 1885 he became privat-docent in botany and pharmacognosy at the University of Berlin. The years 1888 and 1889 were spent in a study tour of the Dutch and British East Indies and in 1890 he became extraordinary professor of legal and pharmaceutical chemistry and pharmacognosy at Berne. In 1889 he became ordinary professor and shortly after founded the Pharmaceutical Institute of the University of Berne. Dr. Tschirch held many responsible offices in Swiss pharmaceutical and health affairs. He received many honorary degrees in medicine and philosophy; was both Flückiger and Hanbury medallist as well as an honorary member of various foreign pharmaceutical associations including the American Pharmaceutical Association, honorary membership in the latter being bestowed upon him in 1910. His scientific articles and publications are numerous, not a year having passed since 1881 that his name did not appear among the authors in the *Jahresbericht der Pharmazie*. Among his better known books the following might be mentioned: *Anatom. Bau der Assimilationsorgane u. Klima und Standort* (Halle, 1881); *Untersuchung über das Chlorophyll* (1884); with Flückiger: *Grundlagen der Pharmakognosie* (1885); *Mechanische Gewebesysteme der Pflanze* (1885); *Angewante Pflanzenanatomie* (1889); with B. Frank: *Wandtafeln für den Unterricht in d. Pflanzenphysiologie* (1889); *Das pharm. Unterrichtsinstitut und das Akad. Studium d. Pharmazeuten* (1890); *Indische Heil- und Nutzpflanzen* (1891); *Das Kupfer vom Standpunkt der gerichtlichen Chemie* (1893); with Oesterle: *Anatom. Atlas der Pharmakognosie und Nahrungsmittelkunde* (1893); *Die Pharmaflopöe, ein Spiegel ihre Zeit* (1904); *Versuch einer Theorie der org. Abführmittel, die Oxymethylanthrachinone enthalten* (1898); *Die Harze u. Harzbehälter* (1900), 2nd Ed. (1906), 3rd Ed. (1931); *Die Chemie und Biologie der pflanzlichen Sekrete* (1908); *Handbuch der Pharmakognosie* (1908-1924), 2nd Ed. (1931- unfinished); *Naturforschung und Heilkunde* (Rektoratsrede 1909); *Das Feigenproblem* (1913); *Vorträge und Reden* (1915); *50 Jahre im Dienste der Pharmazie* (1922); with E. Stock: *Die Harze* (1934); *Das Leben der Pflanze und ihre Seele* (1939).

Professor Tschirch was a prolific worker and a complete list of his publications would require pages. His fame spread far and wide and pharmacists from all corners of the globe came to Berne to study

under him. No small number of these were Americans. His influence, especially in pharmacognosy has spread through the world and international pharmacy owes a debt of gratitude to him and to his untiring efforts. Professor van der Wielen has written an extensive sketch on Professor Tschirch in the December (1939) *Pharmaceutisch Weekblad* from which a great deal of the data used in this brief review has been obtained.

Elmer H. Wirth.

The President Makes a Request

To the Administrative Officers of Member Colleges:

The Executive Committee of the American Association of Colleges of Pharmacy has approved a Monday Evening Program that will be somewhat different from those of the past. Following the joint banquet of the Boards and Colleges and beginning promptly at 8:00 p. m., two conferences will be held: one for professors and instructors in schools of pharmacy and one for administrative officers. They will meet in executive sessions. Questions submitted *sine nomine* by the members of either one of the two conference groups to those of the other will be discussed at the respective conferences and answers formulated for presentation before a joint conference which will convene immediately following the group meetings. Preferably, the questions should be direct ones and pertain to Association policies, procedures, or objectives, any or all phases of pharmaceutical education, instructional or administrative, or in fact, any moot pharmaceutical subject about which a frank expression of opinion would be helpful. They may be submitted before or in question boxes at the time of the Convention. Already a number of questions have been presented by members of the instructional staffs to Dr. E. V. Lynn who has kindly consented to act as leader of this group. By and large, these are sincere and important interrogations for which answers by the deans are respectfully requested. It is hoped that in their separate conference administrative officers will be able to formulate answers which will represent the thought of the members of their group. In like manner, the deans will have the opportunity of putting questions to the conference of professors and instructors from whom they may solicit answers. Therefore, I am asking the administrative officers of our member colleges to send me questions upon which they would appreciate answers that represent a consensus of opinion of their teachers. If we can obtain such a cross-sectional view, we can, I am sure, profit greatly and administer more wisely.

The purpose of having the separate conferences is to remove any actual or imaginary obstacles to a frank and open discussion of any question before the group for consideration. If, at the outset of these conferences, the members of both groups will understand that we all have a common objective, namely, the betterment of our plans for educating young men and women for pharmaceutical service and that because the very nature of our duties is such as to make our respective contributions toward accomplishment of this objective somewhat different, then the

value of a program such as this will be appreciated. While some may hold that these conferences may result only in rippling the calm waters of the Association, I believe that the solutions to our problems will be facilitated and expedited by the discussions in which all feeling of restraint will have been removed from the participants.

The success of this program is dependent entirely upon your support and, therefore, will you be so kind as to send me some questions to be submitted to the instructional group for consideration?

Charles H. Rogers, President, American Association of Colleges of Pharmacy.

* * *

To Professors and Instructors in Schools of Pharmacy:

Complying with the request of President Rogers and in line with my own desire to bring about greater unity of thought in our association, I am addressing this open letter to all educators in pharmacy who are not deans or administrative officers.

For a number of years there has existed some differences of opinion as to whether the policies of the American Association of Colleges of Pharmacy were the most conducive ones to the achievement of objectives which from year to year stand out in greater clarity. In many instances, the members of the instructional staffs have assumed correctly or incorrectly that they have been inhibited to a greater or less degree from freely speaking their minds.

Here is your opportunity. If, after thinking the matter over carefully, you have a question which you wish to submit to the deans collectively, please send it to me as soon as possible. When such questions are collected and duplicates eliminated, they will be sent (without any names) to President Rogers for transmission to the deans.

On Monday evening of the convention we will meet in conference to discuss our views and to formulate answers to whatever questions the deans may present to us. Later in the evening we will meet with them to hear the results.

Your questions may be submitted directly to me at any time before the Convention or they may be placed in a question box which will be available for several days in Convention headquarters.

E. V. Lynn, Professor Pharmaceutical Chemistry,
Massachusetts College of Pharmacy.

The American Association of Colleges of Pharmacy

Forty-first Annual Meeting

OFFICERS

President, Charles H. Rogers; Vice-President, Marion L. Jacobs; Secretary-Treasurer, Zada M. Cooper; Chairman of the Executive Committee, Ernest Little.

SUNDAY, MAY 5

8:00 P. M. Meeting of the Executive Committee.

MONDAY, MAY 6

9:00 A. M. Meeting of the Executive Committee.

9:30 A. M. Conferences of Teachers.

1:30 P. M. First Session—Business.

6:00 P. M. Annual Dinner.

8:00 P. M. Second Session—Conferences of Administrative Officers,
Professors and Instructors.

TUESDAY, MAY 7

9:30 A. M. Joint Session of the American Pharmaceutical Association,
The National Association of Boards of Pharmacy and
the American Association of Colleges of Pharmacy.

2:00 P. M. Third Session—Business.

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Sessions of the Association

FIRST SESSION, MONDAY, MAY 6, 1:30 P. M.

1. Roll Call.
2. Appointment of Committees on Resolutions.
3. Appointment of Nominating Committee.
4. Appointment of Auditing Committee.
5. Address of the President, Charles H. Rogers.
6. Report of the Secretary-Treasurer, Zada M. Cooper.
7. Report of the Executive Committee, Ernest Little.
8. Reports of Standing Committees:
 - a. Committee on Educational and Membership Standards, B. V. Christensen.
 - b. Committee on Curriculum and Teaching Methods, George L. Webster.
 - c. Committee on Activities for Alumni, George W. Hargreaves.
 - d. Delegates to the American Council on Education, Rufus A. Lyman.
 - e. Committee on Relation of Boards and Colleges, Howard C. Newton.
 - f. Committee on Libraries, Charles O. Lee.
 - g. Committee on Problems and Plans, Rufus A. Lyman.

ANNUAL DINNER, MONDAY, MAY 6, 6:00 P. M.

Address, Thomas W. Murrell.

SECOND SESSION, MONDAY, MAY 6, 8:00 P. M.

- 8:00 P. M. Conference of Administrative Officers. (Executive Session). Charles H. Rogers, presiding.
- 8:00 P. M. Conference of Professors and Instructors (Executive Session), Eldin V. Lynn, presiding.
- 10:00 P. M. Joint Conference of Administrative Officers, Professors and Instructors.

THIRD SESSION, TUESDAY, MAY 7, 2:00 P. M.

1. Recommendations from the Conference of Teachers.
2. Report of the Editor of the American Journal of Pharmaceutical Education, Rufus A. Lyman.
3. Report of Committee on Predictive and Achievement Tests, Carl J. Klemme.
4. Report of Committee on Informative Literature, B. V. Christensen.
5. Report of the Eighth Educational Conference, Charles W. Ballard.
6. National Pharmacy Week, John E. O'Brien.
7. Reports of Special Representatives:
 - a. National Drug Trade Conference, A. G. DuMez.
 - b. Druggists Research Bureau, Paul C. Olsen.
 - c. National Association of Retail Druggists, Charles V. Netz.
 - d. National Wholesale Druggists Association, Robert C. Wilson.
 - e. Historian, Edward Kremers.

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Joint Session of the American Pharmaceutical Association, the American Association of Colleges of Pharmacy and the National Association of Boards of Pharmacy

TUESDAY, MAY 7, 9:30 A. M.

1. Reports:
 - a. Fairchild Scholarship Committee, E. G. Eberle.
 - b. Committee on Pharmaceutical Syllabus, Henry M. Burlage.
 - c. American Council on Pharmaceutical Education, A. G. DuMez.
 - d. Committee on the Status of Pharmacists in the Government Service, H. Evert Kendig.
 - e. Committee on Modernization of Pharmacy Laws, Robert L. Swain.
 - f. Committee on Professional Relations:
 - (1) College Activities, Charles C. Schicks.
 - (2) State Activities, Charles B. Jordan.

* * *

Conference of Teachers of Pharmacy

Chairman, William A. Jarrett; Vice-Chairman, H. Evert Kendig; Secretary, Clark T. Eidsmoe.

MONDAY, MAY 6, 9:30 A. M.

1. An Outline for a Course in Manufacturing Pharmacy, Adley B. Nichols.
2. Is Extensive Equipment Necessary for Teaching Manufacturing Pharmacy, or Can Much of it be Taught by Lecture Without Equipment?, Edward D. Davy.
3. Should Colleges of Pharmacy Which Do Not Have Hospital Connections Attempt to Offer Courses in Manufacturing Pharmacy?, H. George DeKay.

4. Should the Teacher of Manufacturing Pharmacy Have Had Actual Experience in the Commercial Manufacture of Pharmaceuticals?, James N. Etteldorf.
5. Are Graduates of Colleges of Pharmacy Where Manufacturing Pharmacy is Taught Equipped to Handle Manufacturing Problems?, F. E. Bibbins.
6. Practical Dispensing as Taught at the Medical College of Virginia, Thomas D. Rowe.
7. Latin in Prescription Writing, Elmer L. Plein.

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Conference of Teachers of Chemistry

Chairman, H. George DeKay; Vice-Chairman, F. Scott Bukey; Secretary, George W. Hargreaves.

MONDAY, MAY 6, 9:30 A. M.

1. Should Separate Courses be Offered in Drug Assay and Quantitative Analysis? Lloyd M. Parks.
2. A Research Chemist Looks at the Pharmacy Curriculum, F. Scott Bukey.

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Conference of Teachers of Pharmacognosy

Chairman, L. David Hiner; Vice-Chairman, J. A. Reese; Secretary, A. John Schwarz.

MONDAY, MAY 6, 9:30 A. M.

1. Should Chemical Structure Be Included in a Course on Properties of Drugs?, B. V. Christensen.
2. What is the Place of Bioassay in the Pharmaceutical Curriculum, Harald G. O. Holck.
3. What Should be Included in a Laboratory Course in Pharmacology, Toxicology, and Physiology?, Wallace White.
4. How Can Pharmacognosy be Correlated with Courses in Pharmacodynamics and Materia Medica?, Leroy D. Edwards.
5. What Should be Omitted from most of the Present Courses in Pharmacognosy, George W. Fiero.
6. What Apparatus is Requisite for a Well Equipped Laboratory in Pharmacognosy, Elmer H. Wirth.
7. How May Instruction in Physical Properties Best be Presented?, Marin S. Dunn.
8. In Memoriam for Alexander Tschirch, Father of Pharmacognosy.

* * *

Conference of Teachers of Pharmaceutical Economics

Chairman, B. Olive Cole; Secretary, John V. Connor.

MONDAY, MAY 6, 9:30 A. M.

1. A Practical Viewpoint of Pharmaceutical Economics, Frederick D. Lascoff.
2. The Commercial Course Equipment of the Schools of Pharmacy, C. Leonard O'Connell.

3. The Teaching of Salesmanship to Pharmacy Students—John F. McCloskey.
4. How Efficient is Secondary School Training in Arithmetic?—Lloyd L. Boughton.

Proposed Changes in the Constitution and By-laws

At our 1939 meeting President Serles in his presidential address offered the following recommendation:

"That Article VII of the Constitution be amended to read: The officers of the Association shall be a President, a President-elect, a Vice-president, a Secretary-Treasurer, and Chairman of the Executive Committee, all of whom shall be elected by ballot and shall hold their respective offices for one year or until their successors are elected and installed. The President or in his absence the Vice-president, shall preside at all meetings of the Association, shall present an annual address, shall appoint committees and shall perform such other duties as pertain to the office of president."

Article 11 of our Constitution reads as follows:

"*Amendments.* Any proposal to alter or amend this Constitution shall be submitted in writing to the Chairman of the Executive Committee not later than forty days prior to the annual meeting of the Association, and a copy of such proposed alteration or amendment shall be mailed by the Chairman to each member-college not later than thirty days prior to the said annual meeting. Such alteration or amendment shall, upon receiving a two-thirds vote of the membership, become a part of the Constitution.

"Should such alteration or amendment receive an affirmative vote of a majority of the members represented at any meeting, but less than two-thirds of the total membership, the votes of the members not represented at said meeting shall be taken by mail."

You will notice that in accordance with the requirements of the Constitution President Serles' resolution could not be acted upon at the 1939 meeting. The Resolutions Committee therefore recommended that it be received and voted upon at the 1940 meeting. Will you give this very important recommendation your careful consideration and be prepared to express your opinion thereon at the Richmond meeting next May?

At the 1938 meeting President Muldoon offered the following recommendation:

"That the By-laws be so amended as to require after January 1, 1942, that no college will be admitted to membership in the American Association of Colleges of Pharmacy unless it has been accredited previously by the American Council on Pharmaceutical Education."

Action upon this recommendation was deferred until the 1939 meeting. At the 1939 meeting the Executive Committee offered the following recommendation:

"Resolved, that on or after July 1, 1942, no college of pharmacy can be admitted to membership in or continue to be a member of the American Association of Colleges of Pharmacy unless it is accredited by the American Council on Pharmaceutical Education."

This modified version of President Muldoon's recommendation was received by our members and the vote thereon deferred until the 1940 meeting. This is a very important recommendation and will need very careful study by our members. You will be prepared to express the opinion of your school on this proposal at the Richmond meeting next May. It is recommended that if this recommendation is approved, it be made Section 13, Article VIII of our By-laws, that the present Section 13 be made Section 14, and that the present Section 14 be made Section 15.

It is also recommended that Article VIII, Section 14, which reads as follows: "No change in qualifications for admission to or membership in the Association shall be made unless the same has been presented in writing to the Association at a regular meeting, or to the members of the Association by mail at least four months prior to its adoption. In either case, a two-thirds majority of all member-colleges voting on the proposed change is necessary for its adoption." be amended to read as follows: "No change in qualifications for admission to or membership in the Association shall be made unless the same has been presented in writing to the Association at a regular meeting, or to the members of the Association by mail at least four months prior to the vote on its adoption. In either case, a two-thirds majority of all member-colleges voting on the proposed change is necessary for its adoption."

This is a minor change submitted in the interests of clarity.

Ernest Little, Chairman,
Executive Committee.

March 5, 1940.

Status of Colleges Not Accredited by the American Council on Pharmaceutical Education

To All Boards of Pharmacy and Colleges of Pharmacy:

Immediately following the issuance of the list of accredited colleges of pharmacy by the American Council on Pharmaceutical Education on January 1, 1940, some interest developed with respect to the attitude of the National Association of Boards of Pharmacy with particular reference to the status of the students now enrolled in colleges of pharmacy which were not accredited by the Council.

While the official attitude of the National Association of Boards of Pharmacy cannot be definitely stated until after the annual meeting of the Association to be held in Richmond the week of May 6th, the Executive Committee at a meeting held in Baltimore on December 7, 1939, gave full consideration to this matter and was unanimous in its view that while the American Council on Pharmaceutical Education should be supported to the fullest extent possible by the N.A.B.P. and the vari-

ous state boards of pharmacy, the action of the American Council on Pharmaceutical Education should not have a retroactive effect. In fact, no such effect was ever contemplated or intended either by the Council or any of the constituent groups.

The Executive Committee was unanimous in the conclusion that students enrolled in colleges of pharmacy at the time the list of accredited schools was issued by the American Council on Pharmaceutical Education should be given time to graduate and to become registered without having any of their reciprocal rights and privileges curtailed.

The Executive Committee will therefore offer the following recommendation to the annual meeting of the Association to be held at Richmond on May 6-7 of this year:

All applicants for reciprocal registration who are registered or licensed as pharmacists in their respective states on and after July 1, 1944, shall be required to be graduates of schools or colleges of pharmacy accredited by the American Council on Pharmaceutical Education.

If the above recommendation is adopted by the Association, then students enrolled in colleges of pharmacy on January 1, 1940 will be afforded ample time to graduate and become registered with full reciprocal privileges.

This action of the Executive Committee is placed in your hands at this time so that you will know that the Executive Committee has anticipated the questions which are being asked and has sought to deal with them in a manner which will not only do justice to all parties concerned but which is thoroughly consistent with the purposes and objectives for which the American Council on Pharmaceutical Education was primarily set up.

Robert L. Swain
Roy Bird Cook
H. C. Christensen, Secretary
P. H. Costello, President
George A. Moulton, Chairman.

February 7, 1940.

Advance Announcement of Public Scientific Conferences Preceding the 1940 U. S. Pharmacopoeial Convention

AT THE WILLARD HOTEL, WASHINGTON, D. C.
Monday, May 13, 1940

To the Editor:

The Public Scientific Conferences will be held simultaneously during the afternoon and evening of the day preceding the opening of the Convention, Monday, May 13, 1940. The programs are being developed under the direction of the General Chairman of the Revision Committee aided by the Chairmen of Sub-Committees and Advisory Boards and will be presided over by the Sub-Committee and Advisory Board Chairmen.

All who are interested in perfecting the Pharmacopœial monographs are invited to take part in these advance conferences. The greatly increased importance of the scope and the standards of the Pharmacopœia to medicine and surgery, to pharmacy in all of its divisions, and to the enforcement officials of the Federal and State Governments, calls for the widest collaboration from those who are interested in pharmacopœial standards.

Please suggest that those who can participate in this program should write to the specific Sub-Committee or Board Chairman responsible for the subject in which they are interested. The Chairmen are listed in the Pharmacopœia. If preferred, the subject to be presented may be sent directly to the General Chairman of the Committee of Revision, and the Chairman of the particular conference covering the subject will be immediately notified.

Please extend this invitation through the columns of your Journal at the earliest possible date.

January 13, 1940.

E. Fullerton Cook, General Chairman,
The U. S. P. XI Committee of Revision.

A New Scholarship Made Available at University of Idaho College of Pharmacy for Latin American Students

President Harrison C. Dale of the University of Idaho announced the offering of a new scholarship to Latin American students. In making this announcement President Dale stated:

"In the course of the discussion at the recent conference in Washington called by Secretary of State Hull to consider closer relations with the republics of this hemisphere, the point was made that instruction in many Latin American countries was notably weak in many of the technical fields such as forestry and mining engineering, as well as in medicine and related sciences. Because of the ready accessibility of our Idaho institutions to students from the western countries of Central and South America coming by water to San Francisco or Los Angeles, I assured the conference of our willingness to cooperate in furthering the extension of our educational facilities in the service of the people of these countries. Knowing that the Board of Regents of the University and State Board of Education had authorized a waiver of out-of-state tuition fees in a number of instances, I felt justified in announcing that the University of Idaho would be prepared to admit three Latin American students, one in forestry, one in mining engineering, and one in pharmacy without their paying the customary fees."

A number of the airline and steamship companies have already made available, or are planning to award, free transportation scholarships to selected students from Latin American countries coming to the United States for professional training.

Research Program of the Department of Pharmacy, University of Florida

In selecting research problems for candidates for the Master's and Doctor's degrees the policy which has been adopted involves the choice of topics which will give the graduate student experience in applying various techniques and at the same time to seek results which will be of constructive value to the profession of pharmacy. For example, many things which are taught in pharmacy are based on traditional practice which may have been established on an insecure foundation. In these cases the explanations in the textbooks and literature may be in conflict. For example, a persistent study of benzoinated lard finally led to exact information regarding the effect of benzoic acid in retarding the development of the rancidity of lard. Research on the improvement of official formulas is a logical research endeavor in a school of pharmacy. Thus a long continued study of the pharmacy and chemistry of Donovan's Solution led to the present National Formulary formula in which the century old problem of deterioration has been overcome.

A major research project which was started seven years ago and which is still in progress is a study of the fundamental principles of drug extraction. This problem has involved a study of the swelling of drug particles in various menstrua, determination of the rate of penetration of solvents in drugs and many other phases of the subject. An interesting development has been the design of an apparatus for percolation under pressure through an extremely long column of drug. With this equipment fluidextracts of many drugs can be made by straight percolation without resorting to repercolation after the evaporation of weak percolates. The apparatus is constructed largely of pyrex glass pipe and it is thus possible to see what is happening all along the line. Another item of interest was the development of special equipment for measuring the pressure exerted in a percolator during swelling of the drug.

A century ago the retail pharmacist was able to conduct much research for his own professional advancement, particularly in France. At present the retail pharmacist is not in a position to do much research. Naturally he can scarcely look to the manufacturer to solve all his problems. This situation creates a unique opportunity for research in schools of pharmacy on the techniques of compounding and dispensing. The department has recently completed such studies dealing with the liquefaction of material in capsules and methods of overcoming the difficulties have been evaluated. In this study a point of interest was the control of humidity in some of the exposure tests on capsules, thus eliminating a variable factor which is frequently of considerable importance in pharmaceutical operations.

William J. Husa,

School of Pharmacy University of Florida.

Pharmacy Week Window Display Contest Announcement of Awards for 1939

The National Pharmacy Week Window Display Contest Committee, consisting of J. T. Matousek, Harry Baskind, Harry Friaburg, A. P. Gakenheimer, Robert Krebs, Roy W. Swisher, S. J. Sternicki, F. J. Cermak, W. E. Luthy, A. B. Ejbl, A. L. Flandermeyer and Charles Masek, all of Cleveland, Ohio, and John E. O'Brien, Omaha, Nebraska, Chairman of the National Pharmacy Week Committee, has announced the winning displays in the three contesting groups—retailers, colleges of pharmacy and pharmaceutical associations.

The Federal Wholesale Druggists Association Robert J. Ruth Memorial Trophy—a silver loving cup—will be presented to Moosbrugger Drug Company, Dayton, Ohio, and A.Ph.A. Pharmacy Week awards to the School of Pharmacy, Temple University, and to the Pennsylvania Pharmaceutical Association, at such time in the near future as suitable arrangements can be made.

In the retailer's group, First Place was awarded to Moosbrugger Drug Company, Dayton, Ohio. This window display was judged to be the most informative and most direct in the message it carried to laymen as well as to members of the health professions. It emphasized the knowledge and the care required in the filling of prescriptions upon which life may depend. It showed some of the apparatus and materials necessary in present day compounding and some of the apparatus used in olden days.

The following are judged as worthy of special mention in this group and will receive Honorable Mention Certificates:

L. L. Eisentraut Drug Company, Des Moines, Iowa.
Weber & Judd Drug Co., Rochester, Minn.
Foote Pharmacy, Archbald, Penn.
Lloyd Hiller, Chicago, Ill.
A. D. Barnes, Buffalo, N. Y.
Sumner Drug Store, Lincoln, Nebr.
Frank Nau, Portland, Ore.
Hays Drug Store, Portland, Maine.
Don Whitehead Drugs, Boise, Idaho.

In the second group, colleges of pharmacy, First Place was awarded to the School of Pharmacy, Temple University, with Honorable Mention to the College of Pharmacy, State University of Iowa and the Philadelphia College of Pharmacy and Science. The increase in the number of colleges participating was very encouraging.

In the third group, pharmaceutical associations, the Pennsylvania Pharmaceutical Association was awarded First Place. It is hoped that a larger number of associations will take part in future observances by displays either in their headquarters or in other prominent locations as well as by addresses, and by radio and other broadcasts.

The Committee was encouraged by the number of entries in the contest and wishes to urge those state associations that did not participate to do so next year. Excellent descriptions accompanied most of

the photographs and advertising and proprietary signs and labels were absent from a large proportion of the photographs submitted.

The entries were judged from many angles with special attention given to originality, simplicity, accuracy, neatness, and appeal to the public. Based on its experience, the Committee approves the following recommendations submitted last year:

1. Every display should preferably carry out a *single* theme, and should be designed to inform the public about some phase of pharmaceutical service.

2. Every display should carry a prominent banner or sign with a clear, brief, forceful *title*—for example, "THE PROGRESS OF PHARMACY", "THE PROTECTION OF HEALTH", "PHARMACEUTICAL DISCOVERIES", etc. The absence of such a statement, telling what the display represented is a weakness in many displays.

3. Crowded displays are not effective and frequently the message is lost by attempts to fill up space.

4. Care should be taken to exclude all proprietary labels and signs from displays.

5. Displays might profitably be used several times during the year.

The Committee feels that the recent observance of Pharmacy Week was the most general and successful in the history of this movement. The demand for Pharmacy Week Articles was good this year and they were apparently used more extensively in addresses and in publicity, especially by the radio.

The Pharmacy Week messages by President Roosevelt and by President DuMez of the A.Ph.A. were given wide publicity. A number of Governors and other state and local officials issued similar messages.

Two radio addresses were broadcast over a nationwide hookup and many over state and local stations in some localities on every day of the week. Pharmacy Week addresses before religious, civic, educational and other groups were more numerous than ever, as were the editorials and other articles dealing with the Observance.

News comes to us that Dean Emeritus F. J. Wulling and Mrs. Wulling of the University of Minnesota and Dean Emeritus Wilber J. Teeters of the State University of Iowa have been enjoying the Florida sunshine during the months of the rigorous northern winter. We are happy that they were so privileged.

The University of Minnesota Extension Division is offering to registered pharmacists a two hour lecture course in Vitamins and Biological Products under the direction of Professor E. B. Fischer and Dr. Ole Gisvold. The fourth Pharmaceutical Institute was offered to a class of sixty pharmacists of the northwest by the University of Minnesota on February 5-7. Faculty members from the Schools of Business Administration, Medicine, Pharmacy and from the Division of Veterinary Medicine participated in the program. Dean W. F. Sudro of North Dakota Agricultural College, Professor Louis Zopf of the University of Iowa, Dr. Robert L. Swain of New York City and Drs. D. L. Tabern and F. E. Schmidt of Chicago were guest lec-

turers. The lectures were interspersed with demonstrations and motion picture films of pharmaceutical interest. The program of the annual meeting of the Minnesota State Pharmaceutical Association held on April 8-10, gave a full day to a joint meeting of the Scientific and Practical Pharmacy Section of the Association and the Northwestern Branch of the American Pharmaceutical Association. Dean Charles H. Rogers and Professor Earl B. Fischer, chairman of the Northwestern Branch presided.

Dean Lucas L. Velez of the College of Pharmacy of the University of Puerto Rico has been absent from his duties since the beginning of this academic year. His continued illness led the Board of Trustees to grant him a leave of absence for one year. Dean Velez has been an outstanding figure in pharmacy in Puerto Rico. After having worked at his profession in his drug store he was named a member of the Insular Board of Pharmacy. Since 1917 he has worked in the College of Pharmacy, being made dean in 1928. He was one of the organizers of the Puerto Rican Pharmaceutical Association and was the first editor of its official publication, *The Porto Rico Pharmaceutical Review*. He founded the Porto Rico Pharmaceutical Cooperative Association for the protection of retail pharmacists against high prices maintained by wholesale druggists. He was its first president and was reelected four times in succession. He has been a real leader of high merit in pharmaceutical education in Puerto Rico. We hope that he will recover soon and resume his work in the college.

The Federal Bureau of Investigation is seeking men for the position of Junior Analytical Chemist (Toxicology—Serology) in the technical laboratory of the Bureau at Washington. The starting salary is \$2000. The holding of this position is considered prerequisite to the subsequent appointment to the positions of Assistant Analytical Chemist at \$2600 and Analytical Chemist at \$3200. The position is not under Civil Service appointment regulations. Training in the pharmaceutical sciences is especially valuable for those entering this line of work. It opens a new field for well trained men in pharmacy. Application for forms should be made to the Director of the Federal Bureau of Investigation, Washington, D. C.

Mr. L. C. Bird, chairman of the Richmond Planning Committee has named the following men to be chairmen of the various committees:

- Mr. Tom Howard, Vice-Chairman, General Planning Committee
- Mr. Francis Britton, Finance
- Mr. W. E. Locke, Registration
- Mr. R. R. Rooke, Housing
- Mr. William Tarrant, Jr., Publicity
- Dr. S. S. Negus, Public Relations
- Mr. Tom D. Rowe, Information and Transportation
- Dr. Harvey B. Haag, Entertainment
- Dr. J. A. Reese, Meetings and Meeting Rooms
- Mr. Eldon Roberts, Jr., Exhibits
- Mr. Garnett Vaughan, Williamsburg Trip

Special requests for information should be addressed to the various chairmen in care of Mr. Bird.

New Books

THE SQUIBB ANCIENT PHARMACY—A Catalog of the Collection prepared by George Urdang, Sc.D., in collaboration with F. W. Nitardy, Ph.C. 1940. 190 pages. Illustrated. E. R. Squibb & Sons. Price \$1.00.

One of the most delightful hours the writer ever spent in New York was in the Squibb Ancient Pharmacy. How I wish I might have had this catalog in my hand then! But one does not have to go to New York to enjoy the Squibb Pharmacy. This Catalog, which breathes the personality of Dr. George Urdang on every page, is so beautifully illustrated and the legends are so clear that one can sit by the hour at his own fireside and enjoy the pharmaceutical history and the beauty that its pages unfold. I am wondering if this catalog might not be helpful to one wandering up and down through the drug stores of this land, in rescuing some priceless relics of another day from the ash can. There are many collections in this country which must contain treasures that we pass by because no one knows enough, or has taken the trouble to write their history. I am thinking of Dean Wulling's collection in the University of Minnesota. It would be a fine thing if some way money could be found to enable Dr. Urdang to go from place to place and write the story of the collections. And further, if Dr. Urdang and Dr. J. Leon Lascoff could get together and put into words the history that is hidden from most of us, but resting on the shelves of the Lascoff Pharmacy in New York City, a real contribution to historical pharmacy would be made. Such a historical catalog of these collections would become a great teaching tool and all around us these things which are now meaningless would become objects of dignity, pride and inspiration.

R. A. L.

BIOLOGICAL PRODUCTS by Louis Gershenfeld, P.D., B.Sc., Ph.M., Professor of Bacteriology and Hygiene and Director of the Bacteriological and Clinical Chemistry Laboratories of the Philadelphia College of Pharmacy and Science. 1939. 236 pages. Illustrated. Romaine Pierson Publishers. Price \$4.15.

The author has written the book in order to give a convenient and authoritative source of the preparation, composition, therapeutic and prophylactic uses, presentation and standardization of biological products. It should be of value to physicians, pharmacists, and laboratory workers.

R. A. L.

THE ESSENTIALS OF PHYSIOLOGY AND PHARMACODYNAMICS by George Bachmann, M.S., M.D., Professor of Physiology in the School of Medicine of Emory University, and A. Richard Bliss, Jr., Ph.D., M.D., LL.D., Professor of Pharmacology and Dean of Pharmacy in Howard College, Birmingham. Third Edition. 1940. 508 pages. Illustrated. The Blakiston Company. Price \$4.50.

In this book the authors have made a sincere effort to prepare a text for a combined course in physiology and pharmacology. One reason for this plan is stated to be that there is no suitable book in physiology

for pharmacy students, those for the medical ones being too extensive. With such a book as the *Machinery of the Body* by Carlson and Johnson there seems, to the reviewer, to be a text in the market amply suited to the needs of a course in physiology in the pharmacy curriculum. Although a combined course in physiology and biochemistry might have certain advantages and though a certain amount of review material from physiology may be valuable to the pharmacology student, the fundamental question really is whether physiology should not be completed before any pharmacodynamics is taken; to us that plan seems the better one, inasmuch as it seems strange to talk about actions of anesthetics at a time when the students know nothing of the physiology of respiration or circulation upon both of which the anesthetics may exert a profound influence. However, if one would grant that with sufficient skill a combination course may be feasible, the next question arises whether it is possible to put a sufficient amount of scientific material into the space allotted in the present text, considering that it necessarily must contain considerable physiological anatomy and that it contains a large number of pages in full print dealing with descriptions of drugs. Our fear is that it is not possible to give sufficient details. When it is stated in regard to the barbiturates (as a group) that they are "very slowly destroyed in the body", and excreted almost exclusively by the kidneys, this would leave the impression that all barbiturates are slowly destroyed, whereas some such recent ones as evipal and pentothal are really quickly broken down; as to the excretion, the impression is given that large proportions are excreted by the kidneys, whereas in many cases only traces of barbiturates may be found in the urine. It would also seem worthy of note to mention the extensive use of phenobarbital in treating epilepsy and the importance of alcohol drinking in relation to automobile driving. In view of the facts that in general the physiology and pharmacology is presented in a clear and understandable manner and that the book contains many excellent illustrations and beautiful graphs, our opinion would be that if it could be divided into two major sections with slight enlargements in certain places, it would serve its purpose of being a combined text in physiology and in pharmacology better than by the present plan.

H. G. O. H.

MATERIA MEDICA, PHARMACOLOGY AND THERAPEUTICS by Harold N. Wright, M. S., Ph. D., Assistant Professor of Pharmacology, University of Minnesota, and Mildred Montag, R. N., M. A., Instructor in Nursing Arts, St. Luke's Hospital, New York City. 1939. 566 pages. Illustrated. W. B. Saunders Company. Price \$2.75.

Although this text is written for nurses, it contains much material which may be of interest to the pharmacy student. Not only is the book up-to-date and clearly written, but it is illustrated with a number of pictures showing various practical sides of pharmacology. The technique of administration of drugs and the various parts of the physiological anatomy are studied as an aid to learning the location of the action of drugs. The last chapter is devoted very concisely to the general aspects of toxicology, and is followed by a handy glossary defining the most common medical terms. At the end of each chapter is a good bibliography.

H. G. O. H.

THE 1939 YEAR BOOK OF GENERAL THERAPEUTICS edited by Bernard Fantus, M. S., M. D., Professor of Therapeutics, University of Illinois College of Medicine, and Leroy Hendrick Sloan, S. B., M. D., Professor of Medicine in the same institution. 1939. 532 pages. Illustrated. The Year Book Publishers, Chicago. Price \$2.50.

To teachers of pharmacology, therapeutics and first aid this well established year-book serves admirably in helping to keep up with the world's advances in the production, uses, and actions of drugs and new apparatus. It also discusses other types of treatment aside from the medicinal, such as the refrigeration therapy in cancer. The authors not only have succeeded in presenting these advances in clear readable form by condensing numerous selected articles from domestic and foreign journals, but in some places add little notes indicating their own views as to the value of the new, which is included only when the editors have considered it sound. Naturally, considerable space is given to the extensive advances in vitamin and hormone therapy and to the sulfanilamide field, but all fields are covered, including that of the toxicology of a number of drugs. Numerous illustrations help to present the new apparatus and advances in treatment. All of the topics discussed carry the original references appended, which makes it easy to quickly find the source. The Year Book is of great value in teaching physiology and pharmacology because of its practical application.

H. G. O. H.

ELEMENTS OF HUMAN PHYSIOLOGY by Miriam Scott Lucas, B. S., Ph. D. 1940. 400 pages. 158 engravings, 12 in color. Lea and Febiger.

The book is written from the view point of the student and teacher of physiology, not from the view point of the specialist. The text is limited to the field of human physiology but in the experimental work animals are frequently referred to. The illustrations are excellent, unusually clear and well chosen and are sufficient to permit the study of physiology without a precourse in anatomy and histology. Controversial subjects are presented, lessening the tendency toward dogmatism on the part of the student. It should admirably serve the purpose the author intended.

R. A. L.

The American Pharmaceutical Association is to be congratulated upon the fine appearance of the Scientific and Practical Pharmacy editions of the journal. Both editions will serve a greater usefulness in the fields to which they are devoted.

R. A. L.

INSTITUTIONS HOLDING MEMBERSHIP IN THE ASSOCIATION

NEW JERSEY

Rutgers University, The State University of New Jersey, New Jersey College of Pharmacy, Newark; Ernest Little, Dean (1922).

NEW YORK

Columbia University, College of the City of New York; Charles W. Ballant, Dean (1929).

Fordham University, College of Pharmacy, New York; James E. Mullen, Dean (1922).

Long Island University, Brooklyn College of Pharmacy, Brooklyn; James E. Schaefer, Dean (1929).

University of Buffalo, School of Pharmacy, Buffalo; A. B. Lawson, Dean (1929).

NORTH CAROLINA

University of North Carolina, School of Pharmacy, Chapel Hill; J. Groves Beard, Dean (1917).

NORTH DAKOTA

North Dakota Agricultural College, School of Pharmacy, Fargo; William F. Butler, Dean (1922).

OHIO

Ohio Northern University, College of Pharmacy, Ada; Randolph E. Smith, Dean (1923).

Ohio State University, College of Pharmacy, Columbus; E. V. Christensen, Dean (1920).

Western Reserve University, School of Pharmacy, Cleveland; Edward Sperry, Dean (1922).

OKLAHOMA

University of Oklahoma, School of Pharmacy, Norman; David E. B. Johnson, Dean (1924).

OREGON

Oregon State College, School of Pharmacy, Corvallis; Adolph Zieff, Dean (1915).

North Pacific College of Oregon, School of Pharmacy, Portland; Anthony G. Mihalchen, Dean (1914).

PENNSYLVANIA

Duquesne University, School of Pharmacy, Pittsburgh; Hugh G. Muldoon, Dean (1927).

Philadelphia College of Pharmacy and Science, Philadelphia; Ivor Griffith, Dean (1920).

Temple University, School of Pharmacy, Philadelphia; H. Scott Mendig, Dean (1922).

University of Pittsburgh, Pittsburgh College of Pharmacy, Pittsburgh; G. Leonard O'Connell, Dean (1920).

PILIPINES

University of the Philippines, College of Pharmacy, Manila; Mariano V. del Socorro, Dean (1917).

PUEBLO RICO

University of Puerto Rico, College of Pharmacy, Rio Piedras; Luis Torrealba, Acting Dean (1924).

RHODE ISLAND

Rhode Island College of Pharmacy and Allied Sciences, Providence; W. Henry Rivard, Dean (1924).

SOUTH CAROLINA

University of South Carolina, School of Pharmacy, Columbia; Eugene T. Mosley, Dean (1928).

SOUTH DAKOTA

South Dakota State College, Division of Pharmacy, Brookings; Earl E. Burton, Dean (1926).

TENNESSEE

University of Tennessee, School of Pharmacy, Memphis; Robert L. Crowe, Dean (1914).

TEXAS

University of Texas, College of Pharmacy, Austin; William F. Olday, Dean (1924).

VIRGINIA

Medical College of Virginia, School of Pharmacy, Richmond; Worley F. Budd, Dean (1926).

WASHINGTON

University of Washington, College of Pharmacy, Seattle; Forest J. Goodrich, Acting Dean (1926).

State College of Washington, School of Pharmacy, Pullman; F. M. Dillman, Dean (1912).

WEST VIRGINIA

West Virginia University, College of Pharmacy, Morgantown; J. Lester Harman, Director (1929).

WISCONSIN

University of Wisconsin, School of Pharmacy, Madison; Arthur H. Uhl, Dean (1920).

